INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

IJRCM

IJRCM

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

Indexed & Listed at:

Ulrich's Periodicals Directory ©, ProQuest, U.S.A., EBSCO Publishing, U.S.A., Cabell's Directories of Publishing Opportunities, U.S.A., Google Scholar,
Open J-Gage, India [link of the same is duly available at Inflibnet of University Grants Commission (U.G.C.)],
Index Copernicus Publishers Panel, Poland with IC Value of 5.09 & number of libraries all around the world.
Circulated all over the world & Google has verified that scholars of more than **5000 Cities** in **187 countries/territories** are visiting our journal on regular basis.

Ground Floor, Building No. 1041-C-1, Devi Bhawan Bazar, JAGADHRI – 135 003, Yamunanagar, Haryana, INDIA

http://ijrcm.org.in/

CONTENTS

CHIEF PATRON

FOUNDER PATRON

FORMER CO-ORDINATOR

ADVISORS

EDITOR

EDITORIAL ADVISORY BOARD

ASSOCIATE EDITORS

FORMER TECHNICAL ADVISOR

FINANCIAL ADVISORS

LEGAL ADVISORS

SUPERINTENDENT

CALL FOR MANUSCRIPTS

We invite unpublished novel, original, empirical and high quality research work pertaining to the recent developments & practices in the areas of Computer Science & Applications; Commerce; Business; Finance; Marketing; Human Resource Management; General Management; Banking; Economics; Tourism Administration & Management; Education; Law; Library & Information Science; Defence & Strategic Studies; Electronic Science; Corporate Governance; Industrial Relations; and emerging paradigms in allied subjects like Accounting; Accounting Information Systems; Accounting Theory & Practice; Auditing; Behavioral Accounting; Behavioral Economics; Corporate Finance; Cost Accounting; Econometrics; Economic Development; Economic History; Financial Institutions & Markets; Financial Services; Fiscal Policy; Government & Non Profit Accounting; Industrial Organization; International Economics & Trade; International Finance; Macro Economics; Micro Economics; Rural Economics; Co-operation; Demography: Development Planning; Development Studies; Applied Economics; Development Economics; Business Economics; Monetary Policy; Public Policy Economics; Real Estate; Regional Economics; Political Science; Continuing Education; Labour Welfare; Philosophy; Psychology; Sociology; Tax Accounting; Advertising & Promotion Management; Management Information Systems (MIS); Business Law; Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labour Relations & Human Resource Management; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; International Relations; Human Rights & Duties; Public Administration; Population Studies; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism & Hospitality; Transportation Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic; Web Design and emerging paradigms in allied subjects.

Anybody can submit the **soft copy** of unpublished novel; original; empirical and high quality **research work/manuscript** ***anytime*** in ***M.S. Word format*** after preparing the same as per our **GUIDELINES FOR SUBMISSION**; at our email address i.e. infoijrcm@gmail.com or online by clicking the link **online submission** as given on our website (***FOR ONLINE SUBMISSION, CLICK HERE***).

GUIDELINES FOR SUBMISSION OF MANUSCRIPT

1. **COVERING LETTER FOR SUBMISSION:**

DATED: _____________

THE EDITOR

IJRCM

Subject: **SUBMISSION OF MANUSCRIPT IN THE AREA OF _______________________.**

(e.g. Finance/Mkt./HRM/General Mgt./Engineering/Economics/Computer/IT/ Education/Psychology/Law/Math/other, please specify)

DEAR SIR/MADAM

Please find my submission of manuscript titled '____' for likely publication in one of your journals.

I hereby affirm that the contents of this manuscript are original. Furthermore, it has neither been published anywhere in any language fully or partly, nor it is under review for publication elsewhere.

I affirm that all the co-authors of this manuscript have seen the submitted version of the manuscript and have agreed to inclusion of their names as co-authors.

Also, if my/our manuscript is accepted, I agree to comply with the formalities as given on the website of the journal. The Journal has discretion to publish our contribution in any of its journals.

NAME OF CORRESPONDING AUTHOR :
Designation/Post* :
Institution/College/University with full address & Pin Code :
Residential address with Pin Code :
Mobile Number (s) with country ISD code :
Is WhatsApp or Viber active on your above noted Mobile Number (Yes/No) :
Landline Number (s) with country ISD code :
E-mail Address :
Alternate E-mail Address :
Nationality :

* i.e. Alumnus (Male Alumni), Alumna (Female Alumni), Student, Research Scholar (M. Phil), Research Scholar (Ph. D.), JRF, Research Assistant, Assistant Lecturer, Lecturer, Senior Lecturer, Junior Assistant Professor, Assistant Professor, Senior Assistant Professor, Co-ordinator, Reader, Associate Professor, Professor, Head, Vice-Principal, Dy. Director, Principal, Director, Dean, President, Vice Chancellor, Industry Designation **etc**. ***The qualification of author is not acceptable for the purpose***.

NOTES:

a) The whole manuscript has to be in ***ONE MS WORD FILE*** only, which will start from the covering letter, inside the manuscript. ***pdf. version** **is liable to be rejected without any consideration***.

b) The sender is required to mention the following in the **SUBJECT COLUMN of the mail**:

New Manuscript for Review in the area of (e.g. Finance/Marketing/HRM/General Mgt./Engineering/Economics/Computer/IT/ Education/Psychology/Law/Math/other, please specify)

c) There is no need to give any text in the body of the mail, except the cases where the author wishes to give any **specific message** w.r.t. to the manuscript.

d) The total size of the file containing the manuscript is expected to be below **1000 KB**.

e) Only the **Abstract will not be considered for review** and the author is required to submit the **complete manuscript** in the first instance.

f) ***The journal gives acknowledgement w.r.t. the receipt of every email within twenty-four hours*** and in case of non-receipt of acknowledgment from the journal, w.r.t. the submission of the manuscript, within two days of its submission, the corresponding author is required to demand for the same by sending a separate mail to the journal.

g) The author (s) name or details should not appear anywhere on the body of the manuscript, except on the covering letter and the cover page of the manuscript, in the manner as mentioned in the guidelines.

2. **MANUSCRIPT TITLE:** The title of the paper should be typed in **bold letters**, **centered** and **fully capitalised**.

3. **AUTHOR NAME (S) & AFFILIATIONS:** Author (s) **name**, **designation**, **affiliation** (s), **address**, **mobile/landline number** (s), and **email/alternate email address** should be given underneath the title.

4. **ACKNOWLEDGMENTS:** Acknowledgements can be given to reviewers, guides, funding institutions, etc., if any.

5. **ABSTRACT:** Abstract should be in **fully Italic printing**, ranging between **150** to **300 words**. The abstract must be informative and elucidating the background, aims, methods, results & conclusion in a **SINGLE PARA**. ***Abbreviations must be mentioned in full***.

6. **KEYWORDS:** Abstract must be followed by a list of keywords, subject to the maximum of **five**. These should be arranged in alphabetic order separated by commas and full stop at the end. All words of the keywords, including the first one should be in small letters, except special words e.g. name of the Countries, abbreviations etc.

7. **JEL CODE:** Provide the appropriate Journal of Economic Literature Classification System code (s). JEL codes are available at www.aeaweb.org/econlit/jelCodes.php. However, mentioning of JEL Code is not mandatory.

8. **MANUSCRIPT:** Manuscript must be in ***BRITISH ENGLISH*** prepared on a standard A4 size ***PORTRAIT SETTING PAPER***. *It should be free from any errors i.e.* ***grammatical, spelling*** *or* ***punctuation.*** *It must be thoroughly edited at your end*.

9. **HEADINGS:** All the headings must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.

10. **SUB-HEADINGS:** All the sub-headings must be bold-faced, aligned left and fully capitalised.

11. **MAIN TEXT:**

THE MAIN TEXT SHOULD FOLLOW THE FOLLOWING SEQUENCE:

INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESIS (ES)

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

LIMITATIONS

SCOPE FOR FURTHER RESEARCH

REFERENCES

APPENDIX/ANNEXURE

The manuscript should preferably be in ***2000 to 5000 WORDS***, But the limits can vary depending on the nature of the manuscript.

12. **FIGURES & TABLES**: These should be simple, crystal **CLEAR**, **centered**, **separately numbered** & self-explained, and the **titles must be above the table/figure**. **Sources of data should be mentioned below the table/figure**. *It should be ensured that the tables/figures are referred to from the main text*.

13. **EQUATIONS/FORMULAE**: These should be consecutively numbered in parenthesis, left aligned with equation/formulae number placed at the right. The equation editor provided with standard versions of Microsoft Word may be utilised. If any other equation editor is utilised, author must confirm that these equations may be viewed and edited in versions of Microsoft Office that does not have the editor.

14. **ACRONYMS**: These should not be used in the abstract. The use of acronyms is elsewhere is acceptable. Acronyms should be defined on its first use in each section e.g. Reserve Bank of India (RBI). Acronyms should be redefined on first use in subsequent sections.

15. **REFERENCES**: The list of all references should be alphabetically arranged. ***The author (s) should mention only the actually utilised references in the preparation of manuscript*** and they may follow Harvard Style of Referencing. **Also check to ensure that everything that you are including in the reference section is duly cited in the paper**. The author (s) are supposed to follow the references as per the following:

- All works cited in the text (including sources for tables and figures) should be listed alphabetically.
- Use (**ed.**) for one editor, and (**ed.s)** for multiple editors.
- When listing two or more works by one author, use --- (20xx), such as after Kohl (1997), use --- (2001), etc., in chronologically ascending order.
- Indicate (opening and closing) page numbers for articles in journals and for chapters in books.
- The title of books and journals should be in italic printing. Double quotation marks are used for titles of journal articles, book chapters, dissertations, reports, working papers, unpublished material, etc.
- For titles in a language other than English, provide an English translation in parenthesis.
- ***Headers**, **footers**, **endnotes** and **footnotes** should **not be used** in the document.* However, **you can mention short notes to elucidate some specific point**, which may be placed in number orders before the references.

PLEASE USE THE FOLLOWING FOR STYLE AND PUNCTUATION IN REFERENCES:

BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–23

UNPUBLISHED DISSERTATIONS

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

DATA MINING AND INTRUSION DETECTION SYSTEM (IDS)

P. RAMACHANDRAN
RESEARCH SCHOLAR
J.J. COLLEGE OF ARTS & SCIENCE
BHARATHIDASAN UNIVERSITY
TRICHY

DR. R. BALASUBRAMANIAN
PROFESSOR
J.J. COLLEGE OF ARTS & SCIENCE
BHARATHIDASAN UNIVERSITY
TRICHY

ABSTRACT

In today's world where nearly every company is dependent on the Internet to survive, it is not surprising that the role of network intrusion detection has grown so rapidly. While there may still be some argument as to what is the best way to protect a company's networks (i.e. firewalls, patches, intrusion detection, training, …) it is certain that the intrusion detection system (IDS) will likely maintain an important role in providing for a secure network architecture. That being said, what does current intrusion detection technology provide us? For the analyst who sits down in front of an IDS, the ideal system would identify all intrusions (or attempted intrusions), and take or recommend the necessary actions to stop an attack. Unfortunately, the marketplace for IDS is still quite young and a "silver bullet" solution to detect all attacks does not appear to be on the horizon or necessarily even plausible. So what is the "next step", albeit the "next phase" for intrusion detection? A strong case could be made for the use of data mining techniques to improve the current state of intrusion detection.

KEYWORDS
data mining, intrusion, detection.

1. INTRODUCTION

According to R.L. Grossman in "Data Mining: Challenges and Opportunities for Data Mining During the Next Decade", he defines data mining as being "concerned with uncovering patterns, associations, changes, anomalies, and statistically significant structures and events in data." Simply put it is the ability to take data and pull from it patterns or deviations which may not be seen easily to the naked eye. Another term sometimes used is knowledge discovery.

While they will not be discussed in detail in this report, there exist many different types of data mining algorithms to include link analysis, clustering, association, rule abduction, deviation analysis, and sequence analysis.

According to R.L. Grossman in "Data Mining: Challenges and Opportunities for Data Mining during the Next Decade", he defines data mining as being "concerned with uncovering patterns, associations, changes, anomalies, and statistically significant structures and events in data." Simply put it is the ability to take data and pull from it patterns or deviations which may not be seen easily to the naked eye. Another term sometimes used is knowledge discovery.

While they will not be discussed in detail in this report, there exist many different types of data mining algorithms to include link analysis, clustering, association, rule abduction, deviation analysis, and sequence analysis.

2. RELATED WORK

Data mining techniques first used for knowledge discovery from telecommunication even logs more than a decade ago [9]. Clifton and Gengo [10] have investigated the detection of frequent alert sequences and enhanced by Ferenc [11], Walter A. Kosters and Wim Pijls [12] this knowledge for creating IDS alert filters. Long et al [3] suggested a snort clustering algorithm. During the last 10 years, data mining based methods have also been proposed in many research papers [4, 5, 10, 3, 7, 8].

Our research encompasses many areas of intrusion detection, data mining, and machine learning. In this section, we briefly compare our approaches with related efforts.

In terms of feature construction for detection models, DC-1 (Detector Constructor) [9], first invokes a sequence of operations for constructing features (indicators) before constructing a cellular phone fraud detector (a classifier). We are faced with a more difficult problem here because there is no standard record format for connection or session records (we had to invent our own). We also need to construct temporal and statistical features not just for individual records, but also over different connections and services. That is, we are modeling different logical entities that take on different roles and whose behavior is recorded in great detail. Extracting these from a vast and overwhelming stream of data adds considerable complexity to the problem.

The work most similar to unsupervised model generation is a technique developed at SRI in the Emerald system [15]. Emerald uses historical records to build normal detection models and compares distributions of new instances to historical distributions. Discrepancies between the distributions signify an intrusion. One problem with this approach is that intrusions present in the historical distributions may cause the system to not detect similar intrusions in unseen data.

Related to automatic model generation is adaptive intrusion detection. Teng et al. [33] perform adaptive real time anomaly detection by using inductively generated sequential patterns. Also relevant is Sobirey's work on adaptive intrusion detection using an expert system to collect data from audit sources [28].

Many different approaches to building anomaly detection models have been proposed. A survey and comparison of anomaly detection techniques is given in [34]. Stephanie Forrest presents an approach for modeling normal sequences using look ahead pairs [10] and contiguous sequences [13]. Helman and Bhangoo [12] present a statistical method to determine sequences which occur more frequently in intrusion data as opposed to normal data. Lee et al. [22, 21] uses a prediction model trained by a decision tree applied over the normal data. Ghosh and Schwartzbard [11] use neural networks to model normal data. Lane and Brodley [16, 17, 18] examine unlabeled data for anomaly detection by looking at user profiles and comparing the activity during an intrusion to the activity under normal use.

3. CURRENT IDS DETECT INTRUSIONS

In order for us to determine how data mining can help advance intrusion detection it is important to understand how current IDS work to identify an intrusion. There are two different approaches to intrusion detection: misuse detection and anomaly detection. Misuse detection is the ability to identify intrusions based on a known pattern for the malicious activity. These known patterns are referred to as signatures. The second approach, anomaly detection, is the attempt to identify malicious traffic based on deviations from established normal network traffic patterns. Most, if not all, IDS which can be purchased today are based on misuse detection. Current IDS products come with a large set of signatures which have been identified as unique to a particular vulnerability or exploit. Most IDS vendors also provide regular signature updates in an attempt to keep pace with the rapid appearance of new vulnerabilities and exploits.

SHORTFALLS WITH CURRENT IDS

While the ability to develop and use signatures to detect attacks is a useful and viable approach there are shortfalls to only using this approach which should be addressed.

- ***Variants***. As stated previously signatures are developed in response to new vulnerabilities or exploits which have been posted or released. Integral to the success of a signature, it must be unique enough to only alert on malicious traffic and rarely on valid network traffic. The difficulty here is that exploit code can often be easily changed. It is not uncommon for an exploit tool to be released and then have its defaults changed shortly thereafter by the hacker community.
- ***False positives***. A common complaint is the amount of false positives an IDS will generate. Developing unique signatures is a difficult task and often times the vendors will err on the side of alerting too often rather than not enough. This is analogous to the story of the boy who cried wolf. It is much more difficult to pick out a valid intrusion attempt if a signature also alerts regularly on valid network activity. A difficult problem that arises from this is how much can be filtered out without potentially missing an attack.
- ***False negatives*** …detecting attacks for which there are no known signatures. This leads to the other concept of false negatives where an IDS does not generate an alert when an intrusion is actually taking place. Simply put if a signature has not been written for a particular exploit there is an extremely good chance that the IDS will not detect it.
- ***Data overload***. Another aspect which does not relate directly to misuse detection but is extremely important is how much data an analyst can effectively and efficiently analyze. That being said the amount of data he/she needs to look at seems to be growing rapidly. Depending on the intrusion detection tools employed by a company and its size there is the possibility for logs to reach millions of records per day.

4. DATA MINING WORKS WITH IDS

Data mining can help improve intrusion detection by adding a level of focus to anomaly detection. By identifying bounds for valid network activity, data mining will aid an analyst in his/her ability to distinguish attack activity from common everyday traffic on the network.

- ***Variants***. Since anomaly detection is not based on pre-defined signatures the concern with variants in the code of an exploit are not as great since we are looking for abnormal activity versus a unique signature. An example might be a Remote Procedure Call (RPC) buffer overflow exploit whose code has been modified slightly to evade an IDS using signatures. With anomaly detection, the activity would be flagged since the destination machine has never seen an RPC connection attempt and the source IP was never seen connecting to the network.
- ***False positives***. In regards to false positives there has been some work to determine if data mining can be used to identify recurring sequences of alarms in order to help identify valid network activity which can be filtered out.
- ***False negatives*** …detecting attacks for which there are no known signatures. By attempting to establish patterns for normal activity and identifying that activity which lies outside identified bounds, attacks for which signatures have not been developed might be detected. An extremely simple example of how this would work would be to take a web server and develop a profile of the network activity seen to and from the system. Let us say the web server is locked down and only connections to ports 80 and 443 are ever seen to the server. Thus, whenever a connection to a port other than 80 or 443 is seen the IDS should identify that as an anomaly. While this example is quite simple this could be extended to profiling not only individual hosts, but entire networks, users, traffic based on days of the week or hours in a day, and the list goes on.
- ***Data overload***. The area where data mining is sure to play a vital role is in the area of data reduction. With current data mining algorithms there exists the capability to identify or extract data which is most relevant and provide analysts with different "views" of the data to aid in their analysis.

5. DIFFICULTIES WHEN IT COMES TO DATA-MINING IN INTRUSION DETECTION

The concept of data mining has been around for years. Despite this data mining in intrusion detection is a relatively new concept. Thus there will likely be obstacles in developing an effective solution. One is the fact that even though the concept of data mining has been around for some time the amount of data to be analyzed and its complexity is increasing dramatically. As stated previously, it is possible for a company to collect millions of records per day which need to be analyzed for malicious activity. With this amount of data to analyze one can guess that data mining will become quite computationally expensive. Unfortunately, for some processing power or memory is not always cheap or available. Of course there may be the argument that you only need samples of the data in order to generate profiles, but there will also be the argument that analyzing anything, especially network traffic, without all the data could lead to false conclusions. Another obstacle will be tailoring data mining algorithms and processes to fit intrusion detection. An effort to identify how the data needs to be looked at in order to provide us with a better picture is surely integral in providing accurate and effective results.

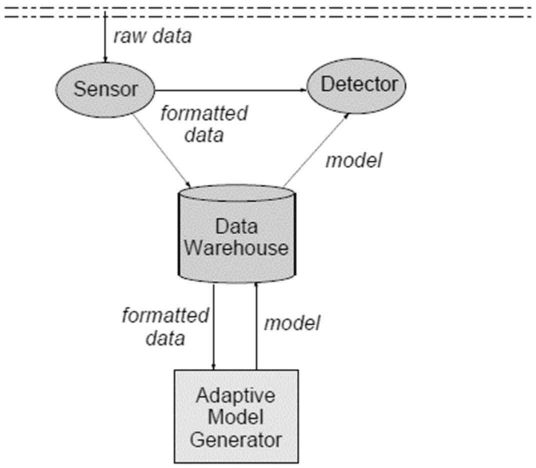
6. SYSTEM ARCHITECTURE

The overall system architecture is designed to support a data mining-based IDS with the properties described throughout this paper. As shown in Figure 2, the architecture consists of sensors, detectors, a data warehouse, and a model generation component. This architecture is capable of supporting not only data gathering, sharing, and analysis, but also data archiving and model generation and distribution

The system is designed to be independent of the sensor data format and model representation. A piece of sensor data can contain an arbitrary number of features. Each feature can be continuous or discrete, numerical or symbolic. In this framework, a model can be anything from a neural network, to a set of rules, to a probabilistic model. To deal with this heterogeneity, an XML encoding is used so each component can easily exchange data and/or models.

Our design was influenced by the work in standardizing the message formats and protocols for IDS communication and collaboration: the Common Intrusion Detection Framework (CIDF, funded by DARPA) [29] and the more recent Intrusion Detection Message Exchange Format (IDMEF, by the Intrusion Detection Working Group of IETF, the Internet Engineering Task Force). Using CIDF or IDMEF, IDSs can securely exchange attack information, encoded in the standard formats, to collaboratively detect distributed intrusions. In our architecture, data and model exchanged between the components are encoded in our standard message format, which can be trivially mapped to either CIDF or IDMEF formats. The key advantage of our architecture is its high performance and scalability. That is, all components can reside in the same local network, in which case, the work load is distributed among the components; or the components can be in different networks, in which case, they can also participate in the collaboration with other IDSs in the Internet.

FIGURE 2: THE ARCHITECTURE OF DATA MINING BASED IDS



7. CONCLUSION

Obviously data mining and anomaly detection is not a silver bullet for intrusion detection, nor should it be a replacement for misuse detection. The goal should be to effectively integrate anomaly detection and misuse detection to create an IDS which will allow an analyst to more accurately and quickly identify an attack or intrusion on their network.

A serious limitation of our current approaches (as well as with most existing IDSs) is that we only do intrusion detection at the network or system level. However, with the advent and rapid growth of e-Commerce (or e-Business) and e-Government (or digital government) applications, there is an urgent need to do intrusion and fraud detection at the application-level. This is because many attacks may focus on applications that have no effect on the underlying network or system activities. We have previously successfully developed data mining approaches for credit card fraud detection [2, 3, 4]. We plan to start research efforts on IDSs for e-Commerce and e-Government applications in the near future. We anticipate that we will be able to extend our current approaches to develop application-level IDSs because the system architecture and many of our data mining algorithms are generic (i.e., data format independent). For example, we can develop (and deploy) a sensor for a specific application, and extend the correlation algorithms, with application domain knowledge, in the detectors to combine evidences from the application and the underlying system in order to detect intrusion and frauds.

REFERENCES

1. A. Ghosh and A. Schwartzbard. A study in using neuralnetworks for anomaly and misuse detection. In Proceedings of the Eighth USENIX Security Symposium, 1999.
2. Gordeev, Mikhail. "Intrusion Detection: Techniques and Approaches." URL: http://www.infosys.tuwien.ac.at/Teaching/Courses/AK2/vor99/t13 (10 Oct 00).
3. Grossman, R.L. "Data Mining: Challenges and Opportunities for Data Mining During the Next Decade." May 1997.
4. Lee, Wenke and Stolfo, Salvatore. "Data Mining Approaches for Intrusion Detection."
5. Rothleder, Neal. "Data Mining for Intrusion Detection." The Edge Newsletter. Aug 2000. URL: http://www.mitre.org/pubs/edge/august_00/rothleder.htm (9 Oct 00)
6. W. Lee, R. Nimbalkar, K. Yee, S. Patil, P. Desai, T. Tran, and S. J. Stolfo. A data mining and CIDF based approach for detecting novel and distributed intrusions. In Proceedings of the 3rd International Workshop on Recent Advances in Intrusion Detection (RAID 2000), October 2000. to appear.
7. W. Lee and S. J. Stolfo. Data mining approaches for intrusion detection. In Proceedings of the 1998 USENIX Security Symposium, 1998.
8. R. Lippmann, D. Fried, I. Graf, J. Haines, K. Kendall, D. McClung, D. Weber, S. Webster, D. Wyschogrod, R. Cunninghan, and M. Zissman. Evaluating intrusion detection systems: The 1998 darpa off-line intrusion detection evaluation. In Proceedings of the 2000 DARPA Information Survivability Conference and Exposition, January 2000.
9. H. Mannila and H. Toivonen. Discovering generalized episodes using minimal occurrences. International Conference on Knowledge Discovery in Databases and Data Mining, Portland, Aug 1996.
10. L. Pornoy. Intrusion detection with unlabeled data using clustering. In Undergraduate Thesis, Columbia University, Department of Computer Science, 2000.
11. S. J. Stolfo, W. Fan, W. Lee, A. Prodromidis, and P. Chan. Cost-sensitive modeling for fraud and intrusion detection: Results from the JAM project. In Proceedings of the 2000 DARPA Information Survivability Conference and Exposition, January 2000.
12. H. S. Teng, K. Chen, and S. C. Lu. Adaptive real-time anomaly detection using inductively generated sequential patterns. In Proceedings of the IEEE Symposium on Research in Security and Privacy, pages 278–284, Oakland CA, May 1990
13. C. Warrender, S. Forrest, and B. Pearlmutter. Detecting intrusions using system calls: alternative data models. In 1999 IEEE Symposium on Security and Privacy, pages 133–145. IEEE Computer Society, 1999.
14. E. Eskin. Anomaly detection over noisy data using learned probability distributions. In Proceedings of the Seventeenth International Conference on Machine Learning (ICML-2000), 2000.
15. E. Eskin, M. Miller, Z.-D. Zhong, G. Yi, W.-A. Lee, and S. Stolfo. Adaptive model generation for intrusion detection. In Proceedings of the ACMCCS Workshop on Intrusion Detection and Prevention, Athens, Greece, 2000.

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Computer Application & Management (IJRCM) acknowledges & appreciates your efforts in showing interest in our present issue under your kind perusal.

I would like to request you to supply your critical comments and suggestions about the material published in this issue, as well as on the journal as a whole, on our e-mail **infoijrcm@gmail.com** for further improvements in the interest of research.

If you have any queries, please feel free to contact us on our e-mail **infoijrcm@gmail.com**.

I am sure that your feedback and deliberations would make future issues better – a result of our joint effort.

Looking forward to an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-
Co-ordinator

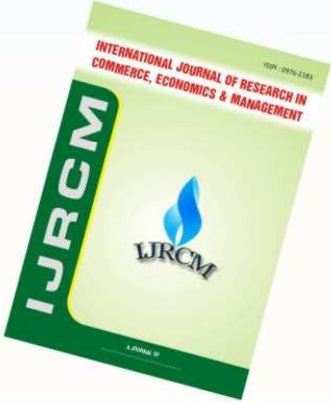
DISCLAIMER

The information and opinions presented in the Journal reflect the views of the authors and not of the Journal or its Editorial Board or the Publishers/Editors. Publication does not constitute endorsement by the journal. Neither the Journal nor its publishers/Editors/Editorial Board nor anyone else involved in creating, producing or delivering the journal or the materials contained therein, assumes any liability or responsibility for the accuracy, completeness, or usefulness of any information provided in the journal, nor shall they be liable for any direct, indirect, incidental, special, consequential or punitive damages arising out of the use of information/material contained in the journal. The journal, neither its publishers/Editors/ Editorial Board, nor any other party involved in the preparation of material contained in the journal represents or warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such material. Readers are encouraged to confirm the information contained herein with other sources. The responsibility of the contents and the opinions expressed in this journal are exclusively of the author (s) concerned.

ABOUT THE JOURNAL

In this age of Commerce, Economics, Computer, I.T. & Management and cut throat competition, a group of intellectuals felt the need to have some platform, where young and budding managers and academicians could express their views and discuss the problems among their peers. This journal was conceived with this noble intention in view. This journal has been introduced to give an opportunity for expressing refined and innovative ideas in this field. It is our humble endeavour to provide a springboard to the upcoming specialists and give a chance to know about the latest in the sphere of research and knowledge. We have taken a small step and we hope that with the active co-operation of like-minded scholars, we shall be able to serve the society with our humble efforts.

Our Other Journals



ISSN : 0976-2183

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

IJRCM

ISSN : 0976-2183

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT

IJRCM

ISSN : 0976-2183

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE & MANAGEMENT

IJRCM