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A Comparative Study of various Challenges and Solutions of Cyber-Security Network through the Data Mining Techniques

Tiwari Bharat lal and Pandey Prabhat

Email id: tiwari.bharat6899@gmail.com

Abstract

The consideration of attractive and source full technologies for providing the cyber security networks. We have discussing some various innovative challenges and its solutions with extensive framework methodologies. In economical communication to determine authentic activities that analyzing set of rules and perspective structures of data security network. To expect the achievement of the promotion movement for innovative patterns in the Data mining framework. This study we have also analyzing the more technical explanation like set of methodologies, various dimensions classifying and groups, identified relationship and other perspective set of rule patterns. This learning we indicates the compilation of investigative efforts on the cyber security through the interference detection services in the technique.

Keywords: *Data mining, Data mining framework, IDS, KDD, Network Security, cloud computing*

Introduction

The innovative techniques of data mining are a popular technical standard that translate loads of data into constructive knowledge. In particular conditions of data mining displays for unknown structure patterns along with massive sets of data mining that can facilitate to recognize, expect, and conduct expectations behavior in future. To determine which persons and groups are incapable of transportation revolutionary activities of data mining techniques are organism used to recognize apprehensive specific groups. Due to malevolent software excluding Trojan livestock and cyber security viruses are concerned with defensive processor and network system starting. Data mining is also being applied to provide solutions such as intrusion detection and auditing. In this knowledge we determine center of attention essentially on data mining intended for applications of cyber security.

Discussing of this learning to express the various issues and services of data mining techniques by representing of related tools and challenges points with specific patterns for cyber-security. The analyzing the effective solutions of cyber network security can be finding the different technical

supports with the associations of innovative rules and methods. The introducing of data mining technique recognized the procedure of identify within great data-set patterns.

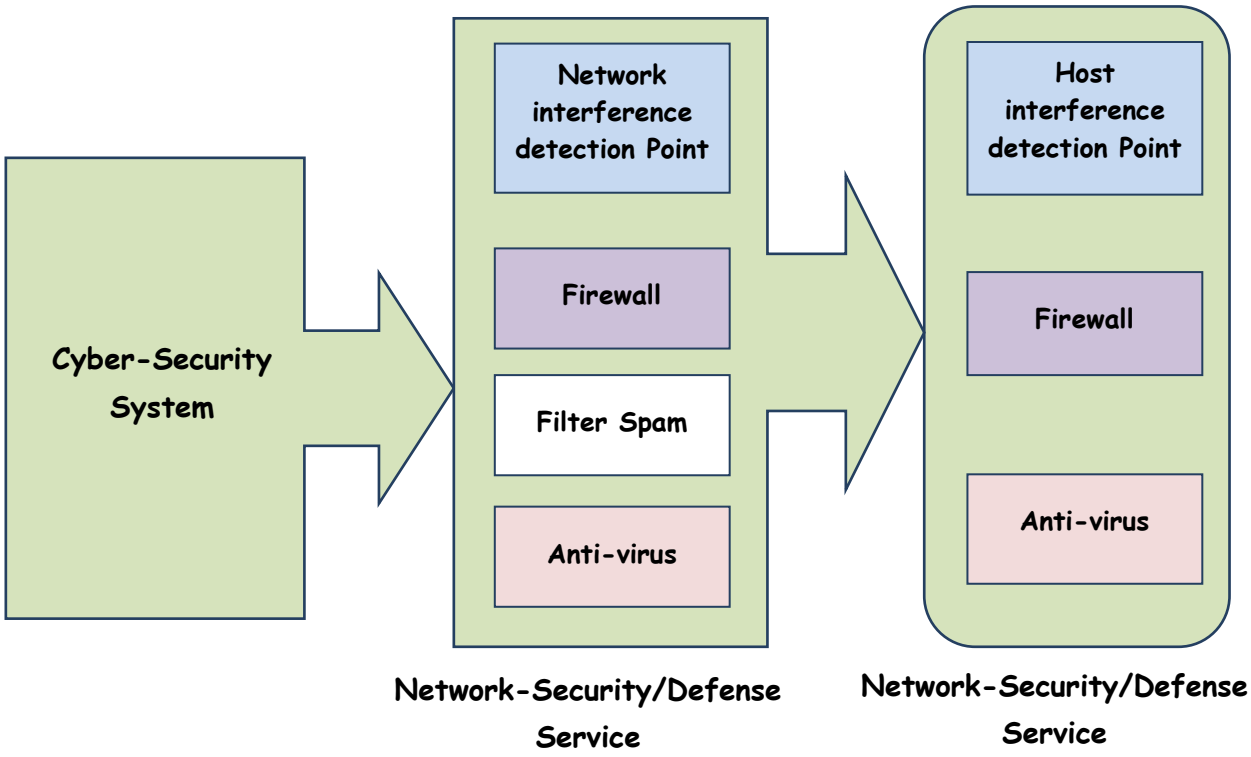

Figure: 1. Conservative cyber-Security in Data mining techniques.

Here, the figure: 1 representing the cyber-security determines and delivered under the two stages known as network detection and host detection system organization. Network security services have considered the terns of firewall, filter spam and anti-virus and next point of network or host defense services has implementing the firewall and anti-virus. Thus, security of cyber network services is provided to various terms of solution and techniques through the data mining framework. Services of cyber-security network are gathering various effective tools and methods with the data mining techniques as like a host security system. Each service has anti-virus and interference-detection service of cyber-security known as IDS [2].

Services and Challenges of Cyber-Security

The next procession to defense services of cyber network is collected the explanation of cyber-security reactions like services of interference detection. IDS considering identify intrusion base information through longer documentation and network security services. The knowledge innovation like KDD (Knowledge Discovery Database) technique applied to consider the security foundation and compile the response of constructive solution. To recognize disbelieving conditions in the cyber network-security through the techniques of data mining are used. We are going to discussing again the consideration of various methodologies, tools of data mining techniques and cyber-security challenges through the following structures in figure: 2.

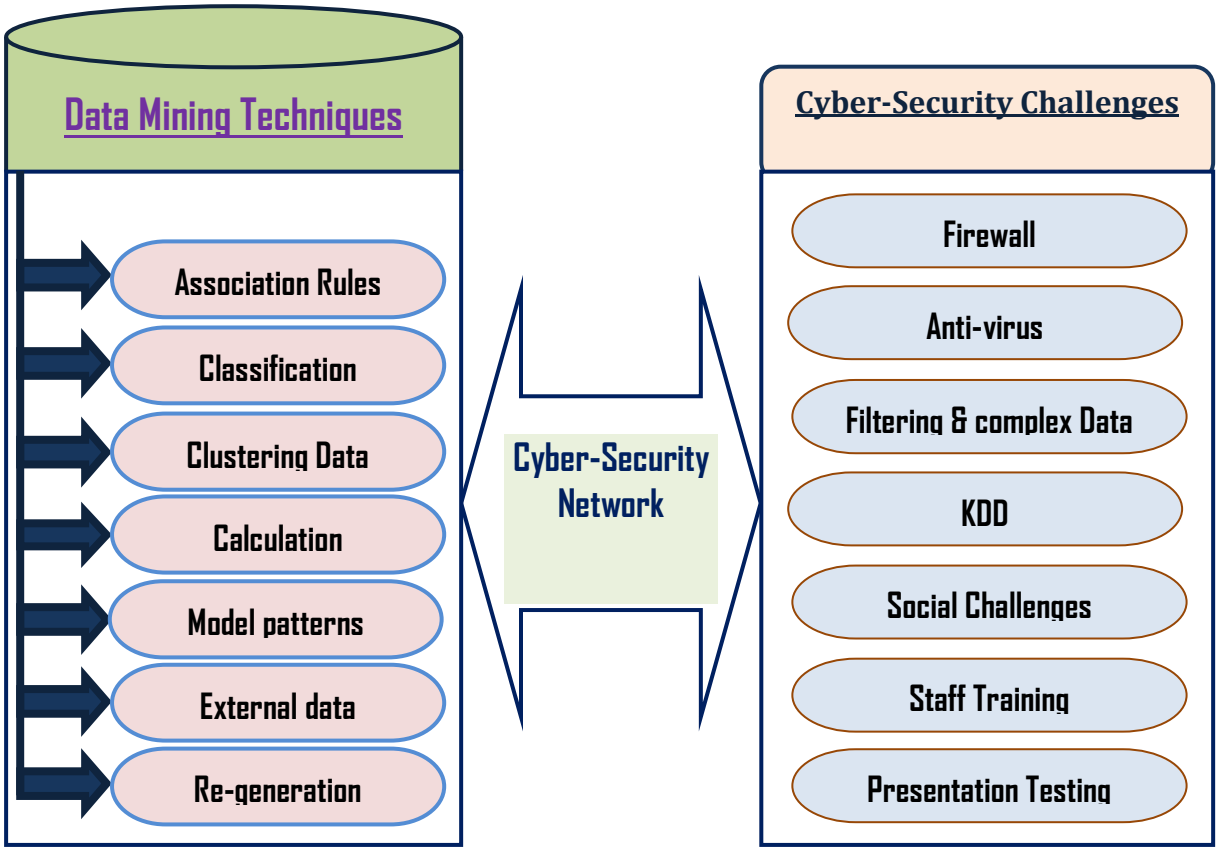

Figure: 2 Challenges with data mining techniques in cyber-security network.

Now, the cyber-security network determines various security challenges with the data mining techniques we representing in the above figure 1, they considerations of data mining techniques to the

supporting and interactive points like Association rules, classification, clustering the data, creating model patterns, using external or physical data, regression and applying the re-generation process for security of cyber network. The challenges and various tools of cyber-security are representing in above figure: 2 that showing points as like firewall services, activated the anti-virus software, complex & big data, knowledge discovery, public key policies, social services & challenges, providing staff training and considering the presentation test in our security with technical support services.

Consequently, discusses the interference detection services to improvement of various properties with the purpose of data mining capabilities:

- Recognized to security issues and detect problem activities
- Classifying the data regression using the association rules are discovered
- Creating model patterns of cyber network and clustering the data in natural form.
- Defining normal activities using external data and applying the re-generation process.
- In network security through the data mining that contains several applications within the cyber-security that permits to focal points of actual attacks.

The applications of technical tools & services to determine with various cyber-security challenges through the techniques of data mining to represent in above figure 2. The techniques of data mining are profoundly used within technical or methodological doing the research work as glowing in big-organization.

Conclusion and future work

The discussed of this learning we analyzed, the great prospective techniques of data mining for cyber-security network. It considers the set of rules and methods that analyze to source fully the security of cyber network through the specific representation. The representation of our learning that considers different tools of data mining techniques and compared with the various challenges of cyber-security. This determination we funded the clarification of the various issues of cyber-security network and applying the recommended factors like association rules, clustering the data, using external data, activate the anti-virus, etc, and other security improvements.

References

[1] A. Mukkamala, A. Sung, and A. Abraham (2005), "Cyber security challenges: Designing efficient intrusion detection systems and antivirus tools," in Enhancing Computer Security with Smart Technology, V. R. Vemuri,Ed. New York, NY, USA: Auerbach, pp. 125–163.

[2] R. Agrawal, T. Imielinski, and A. Swami (1993), "Mining association rules between sets of items in large databases," in Proc. Int. Conf. Manage. Data Assoc. Comput. Mach. (ACM), pp. 207–216.

[3] H. Brahmi, B. Imen, and B. Sadok (2012), "OMC-IDS: At the cross-roads of OLAP mining and intrusion detection," in Advances in KnowledgeDiscovery and Data Mining. New York, NY, USA: Springer, pp. 13–24.

[4] K.Jain and R. C. Dubes (1988), Algorithms for Clustering Data, Englewood Cliffs, NJ, USA: Prentice-Hall.

[5] Sumeet Dua and Xian Du "Data Mining and Machine Learning in Cyber security"

[6] K. Hornik,M. Stinchcombe, and H.White (1989), "Multilayer feedforward networks are universal approximators," Neural Netw., vol. 2, pp. 359–366.

[7] Bolton, R. and D. Hand (2002), Statistical fraud detection: A review. Statistical Science 17 (3),pp. 235-255.

[8] Thuraisingham, B. (2003), "Web Data Mining Technologies and Their Applications in Business Intelligence and Counterterrorism", CRC Press, FL.

[9] Chan, P, et al (1999), "Distributed Data Mining in Credit Card Fraud Detection", IEEE Intelligent Systems, 14 (6).

[10] Lazarevic, A., et al. (2003), "Data Mining for Computer Security Applications", Tutorial Proc. IEEE Data Mining Conference.

[11] Thuraisingham, B. (2004), "Managing Threats to Web Databases and Cyber Systems, Issues, Solutions and Challenges", Kluwer, MA (Editors: V. Kumar et al).

[12] Thuraisingham B. (2002), "Database and Applications Security", CRC Press, 2005.

[13] Thuraisingham B., "Data Miming, Privacy, Civil Liberties and National Security", SIGKDD Explorations.

[14] Khan, L., Awad, M. and Thuraisingham, B. (2007), "A New Intrusion Detection System using Support Vector Machines and Hierarchical Clustering", The VLDB Journal: ACM/Springer-Verlag, 16(1), page 507-521.

