International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 04 | Apr 2019 www.irjet.net p-ISSN: 2395-0072

Big Data Privacy and Security Challenges in Industries

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Abstract - *Extremely large data set is used for computational analysis purpose is called Big Data. This Big Data is used for many purposes like pattern checking, CA (Classifications and Associations) and most importantly activities like humanoid and interactions. Providing security to big data is essential as it can be stolen by hackers. In this regard, the security measures and challenges against big data technologies are discussed in order to provide protection. Analysis for big data to retain the possible risk and privacy issues associated with data security is an effective method for the complete performance metrics for big data.*

Key Words: Big data, Big data analysis, Big data framework, Data security, Data privacy.

1. INTRODUCTION

This Huge volume of data is used in big data technologies. The existing methods for big data analysis is not adequate and big data storing and retrieval is a challenging task [4][11]. Data generation and storing in databases is rapidly growing in now a days. In big data setting, there is enormous issues and complications to store and retrieve data. The term big data denotes storing and analysis huge volume of data to obtain targeted output. Gathering, Storing, Searching, Sharing, Transferring, Analyzing and presenting data as per requirements are the major challenging task in big data. There are three main characteristics defined in big data [10]. They are

- Volume
- Velocity and
- Variety

The following Fig-1 shows capturing data from different sources and processing of data in big data environment.

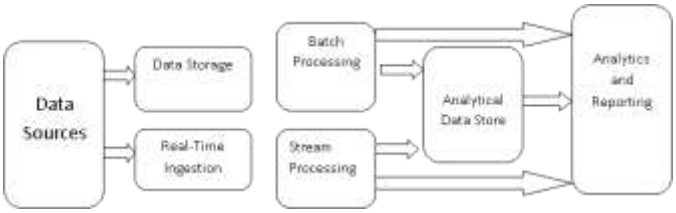

Fig-1 Architecture of Big data

Data obtained from different sources and stored in data bases. The data may be structured or unstructured manner. Data analysis and data processing are done as per the users rights assigned. Users rights defined here is may be a data owners or technical analyst or business analyst [2].

2. RELATED WORK

Privacy and Security [8] in big data plays a major role by considering data privacy, data management, integrity constraints management and framework security [15]. Privacy and Security [3] differs from each other by the means where privacy focuses on the data being collected, shared and used in right manner and security focus on protecting the data from intruder's attack, exploitation of data for other such purposes on the grounds of money mind.

Categories of Big Data Privacy

Data Privacy deals with preserving the privacy of data through some encryption mechanisms [7] for the data being collected from different sources during the analytic stage [9, 12]. Data Administration data being collected from wide variety of sources grows in huge number of volume on daily basis. In which the data object is attached with data about data i.e. metadata providing information about the data object under consideration becomes complex in big data applications. Integrity Security validation of input and the filtering stage embraces an important task in big data applications due to the data mass and those data should be from authorized source if not appropriate actions has to be taken. Framework Security – big data adopts distributed environment in which identification of invaders [13] or malicious users become critical.

Privacy Challenges

Due to the massive growth of data many privacy related concerns needs to be taken into consideration. The most substantial privacy related concerns are: big data analytics become inaccurate, data discrimination, data masking, anonymization turns impossible, security intelligence and compliance audit, making patents and copyrights irrelevant, information security itself becomes a major big data issue.

Security Challenges

Security in big data becomes a leading edge due to the factors velocity, volume and variety. The following are some of the security challenges of big data [1, 5, 6, 14, and 16]

a. Real time security and compliance monitoring provide real time problem detection through privacy analysis.

b. Endpoint input validation used to identify the trusted data by verifying the input data source.

c. Protected database storage and transaction log file auto tiring is required to protect the database storage of the data.

d. Secure computations in distributed environment by the means of protecting mappers and data as prevention steps.

e. Information Security information from different sources like commercial sites, social networking sites, health division, financial services etc., should be handled with high care.

3. DISCUSSION

This paper mainly focuses on the challenges related to privacy and security in big data processing and analytics. The context of security in big data is vast because of the data that is being generated. Hence the major objective of big data in the security perspective needs intelligence in handling the real time threats. Though big data has its own pros it has challenges related to privacy and security that should be overcome in order to realize its massive potential in handling the data. The research focus in the areas related to privacy and security challenges includes privacy, information security, data provenance, human computer interaction and securing big data stores. Thus, appropriate protocols need to be chosen for handling the privacy and security issues by considering the nature of the application.

4. CONCLUSION

Big data plays vital roles in various sectors like banking, IT, Aerospace and medical applications. Handling those heterogeneous data is the scope of this area and innovative methods and scientific approaches are needed as there is enormous growth and demanding filed. Hence there is continuous challenges need to be sort out as the technology improvements and data accumulation at an un-predictable growth. The security and research issues are provided in this paper. So, different methods of providing security and technologies can be considered for implementation. Security retaining techniques in big data are possibly upcoming research in nearby future.

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