INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 2 (2017) PAGES 1748 – 1752
RECEIVED: 08-03-17 PUBLISHED: 22-03-17
March 22, 2017

IMPACT OF BIGDATA IN IOT : A REVIEW

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Abstract:
This paper reviews how IoT is impacted by bigdata .IoT connects physical devices through wireless sensor networks, then track its performance from remote area. IoT can be implemented with other database technologies like cloud,grid,Sql etc. but big data has many opportunites in the real time applications like traffic monitoring, healthcare,online trading,smart home, smart cities and smart connected communities.We also review about tools for Bigdata IoT.Because of its fast data processing its is integrated with IoT.

Keywords : IoT,Bigdata,Smart Connected Communities,Bigdata tools.

1. INTRODUCTION

In the new era of Bigdata and IoT,a survey says , people send 204 million emails, generate 1.8 million Facebook likes, post 278 thousand tweets, and upload 200 thousand photos to Facebook.The boom of Bigdata IoT signify that the amount of devices connected to internet will grow from 13 billion today to 50 billion by 2020. This virtually shows how IoT is impacted by Bigdata. Tamara Dull says “Big data and the Internet of Things can be viewed as Two sides of the same coin”.

2. HOW BIGDATA IS IMPACTED BY IOT

The two most talking technologies in present time are Iot and Bigdata.over last few years Bigdata progress through various domains. Although IoT happens to be diverse, it is extremely linked to Big Data.
The major factors that big data is impacted by IoT are:

A. Big Data storage

IoT Big data is a challenging task as data rate grows faster than expected and also filtering redundant data is mandatorily required. The key provisions of big data storage are that it can handle huge amounts of data and that it can provide the input/output operations per second essential to deliver data to analytics tools. The collected data is of different form and format, so data storage to handle those data must be able to manage them in changeable form. The collected data has to be transferred over the network to data center and maintained there.so, Many companies started using platform as a service to handle their data effectively than using their own infrastructure.

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B. Big Data technologies

There are number of technologies evolved in Big data platform like Hadoop, Map Reduce, HDFS and more.The organizations have to ensure that these technologies can be adopted for their IoT data.

3. IMPACTOF IOT BIGDATA ON DAY TO DAY LIVING

Most discussions of IOT focus on how it come to impact our lives over the coming decades. But hardly any realize how much of an crash IOT already has on our daily lives.

A. Transportation

IoT with Bigdata enables drivers to identify shortcut routes to avoid traffic. GM, BMW, and others have teamed up with new wireless lines to enable LTE in their vehicles, which is redirecting the way people travel.LTE offers real time traffc information, real-time vehicle diagnostics, and more.

B. Healthcare

The mIoT(Medical IoT) is revamping healthcare services.People started using IoT to supervise their health requirements. For example, people can use IoT devices such as smartphones with specific apps to remind them about appointments, changes in blood pressure, calories burnt and much more. One of the major impact IoTs in the health care industry is the remote health monitoring system, where patients can be monitored and advised from anywhere. Real-time location services are another major approach IoT offers. Doctors can easily track device locations, which directly reduces excess time spent using these services.In this healthcare industry mobile apps are used to improve the communication between doctor ad patients.

C. Smart House

IOT technologies allow people to keep track of children or pets left at home. These Technology also used up with sensors that will notify you when certain doors in your house have been opened. A “smart house” is one of the first treai time application people think of when you bring up IOT.Security systems with apps in smart phone allow you to monitor your home from afar, , make sure you turned off the stove, and optimize your lighting.

D. Business

IOT is also help retails to optimize their business in number of ways. Some stores use signals from shoppers smartphones to track their behavior in-store,which is pairing it up with their online data to get customer profile. Retailers with apps can then use the data to deliver coupons and special promotional material to the customer’s phone at the perfect time and place. IOT equipment sensors are already being used to observe machines and notify malfunctions or parts

that need repair. A series of sensors, cameras, and lasers can also be used to monitor the manufacturing process of materials to ensure quality.

E. Pollution Control

Consider AirQualityEgg.com is a device that monitors the quality of air outside of your home or office, then generates the data online to suggest metropolitan and regional data. This analysis is used to calculate urban pollution policies are affecting specific areas.WaterBee.eu is a smart irrigation system that helps farmers to preserve water by monitoring soil from different plots of land and adjusting water usage accordingly.

4. TOOLS FOR REAL TIME BIG DATA ANALYTICS

A. Presto

In order to handle huge amount of data that it collects everyday Facebook developed Presto . Presto is such a stick out in the Hadoop field,this is also one of the reason it has been used by facebook more than a year now. Because of that use, it's got a track record of success. Presto can handle a data in just seconds or minutes that would take hours and days to analyse using other tool. Presto as a service is now used by many Hadoop providers.

B. Hive

Hive was the first Hadoop framework program.It was the original of four mentioned programs. It can able to process and analyze queries from large database quickly than other three programs mentioned.Eventhough it works well ,it does not require real-time performance .So that many companies choose to work with presto and hive to store data.

C. Impala

Impala was developed by Cloudera.Impala is an open source program which adapts programmers to change and improve it.It is faster and less expensive than other bigdata programs.It is Massively Parallel Processing (MPP) query engine that runs natively on Apache Hadoop.

D. Vertica

Vertica can handle and analyze huge amount of data in short space of time.It's architecture is used to be associated with big data with minimum cost and good scalability.

5. BIGDATA IOT FOR SMART CONNECTED COMMUNITIES(SCC):

Internet of Things together with Bigdata are todays monsters ruling the cyber world and realtime applications.Mr YUNCHUAN SUN [et.al] proposed Internet of Things with Bigdata for "smart and connected communities (SCC)".The vision of SCC is to remember the past,live in the present ad plan for future.He also proposed a case study in which he presented TreSight which combines the application of IoT and analytical big data for smart tourism and sustainable

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cultural heritage in the city of Trento, Italy[1,2,3]. Opportunities and Challenges of IoT in SCC:

There are two main opportunities of IoT in SCC.

1. MOBILE CROWDSENSING application of IoT implies collection of large amount of data from mobile sensing devices like smart phones. Its application is categorized based on three different classes like environmental, infrastructure, and social.
2. CYBER-PHYSICAL CLOUD COMPUTING of IoT focus mainly on Cyber Physical System (CPS).It consist of coud computing based sensors , processing, control and data services which is used to build and modify set of CPS data. This paradigm is useful in various SCC samrt applications like healthcare,grid,transportations and disaster management.

There are two main challenges of IoT in SCC includes,

1. CYBERSECURITY AND PRIVACY in SCC are human-centered systems, which collects sensitive sensor data of an individuals and preserve their private information. For example, the GPS sensors used in traffic system can monitor individuals daily route they take from their home to work place.
   It is a main challenge of IoT to preserve these type of private data.
2. RESOURCE LIMITATIONS: Due to dynamic nature of mobile devices the bandwidth capcity of SCC is harder than some wireless sensor networks. Scheduling sensing and communication among large number of devices also a complex task[3].
3.

Opportunities and Challenges of Bigdata in SCC:

Opportunities of BDA in SCC:

In the era of IoT,Bigdata poses major impact in realtime application areas like healthcare,environmental,automobiles and trucks and smart buildings.The integration of physical and computation process in SCC anable large amount of data,which can be analysed and controlled easily by Bigdata with accurate decision making and control.

Challenges of BDA in SCC:

Data heterogeneity is one of the main challenges of Bigdata.The data relevant to SCC are very heterogeneous.For example, in smart building while examining and sensing outside weather and energy consumption data, it is necessary to monitor the stae of data in windows and doors,thermosat setting,building structure and materials among them.To address these issues we have to improve the quality of data at real time like sampling and filtering, improve intelligent data elucidation and semantic interoperability, to implement knowledge creation and reasoning, to conduct short-term and long-term storage[4].

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FUTURE WORK AND CONCLUSION

In future IoT and Bigdata facilitate business to twist data into insights.Though there are privacy and security issues in IoT it can be overcome by implementing privacy or security risk assessment and testing their security measures before launching their products. To overcome the challenges we have to establish ideology and recommendations on how to condense the risks associated with collecting and using data in this big data-IoT era. In this paper, we made some research on how IoT and Big data are coupled to serve our real-time needs. We have to build our future to grip the blow of IoT and Big Data landscape. We have reviewed many application areas of Big data IoT and analytics tools. This paper envisages that people and IoT are connected together and Big data has impacted IoT.The main reason that IoT is impacted by big data is its storage and analytical tools. The big data analytical tools can handle large number of transactions in a few seconds so, Bigdata is the best application to work with IoT. At last we have also discussed about Smart Connected Communities using Big Data analytics and IoT.Bigdata is the best application to work with IoT.

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