Role Of IoT Cloud Computing And Big Data In Health Care Industry

Prof Vani Valsaraj

Dept. of Artifical Intelligence & Machine Learning, HKBK College of Engineering, Bangalore, India

vanivalsaraj77@gmail.com

Abstract— We all are familiar with the use of technologies for the purpose of health care. There are various websites that are available which is very useful for the hospitals in order to record the details of the patients and also helpful for the patients to get information about the hospitals at any time and from anywhere. Along with this we are also familiar with some devices which is useful for analyzing the heart beat for the heart beat prediction and also various other technologies. In most of these techniques the problem occurs in the data storage. Most of the data that are stored in the databases are not very secure and also the accuracy of the output in those technologies are not much efficient. So by analyzing the various technologies that are available today, we are going to provide an overview of how the technologies like cloud computing, big data and IoT can be used in the field of health care. Through this paper we are also trying to say that these technologies are useful not only for the health care but can also be used in the various other fields.

Index Terms— big data, cloud computing, healthcare, IoT.

I. INTRODUCTION

Big data is defined to be the large volume of the data. Big data can be used to store both structured and unstructured data. This is one of the major advantages of the big data. As we can store the large amount of data, the size of the data that can be stored is not limited. Cloud computing is used for the storage of the data. When the data is stored in the cloud, it is very easy to access those data. We can store the data in the cloud as either public or private. Here the concept of amazon cloud storage is discussed for the storage purpose instead of local servers. Main reasons because of which amazon cloud service is being used are its availability, flexibility, etc.

IoT is Internet of Things. This is defined to be the connection of the devices and the web with the help of internet. It can also be defined to a technology through which we can transfer the data over a wireless network in an automatic manner. Here the concept of IoT is mainly used because of the use of the sensors. Sensors are mainly used for the analysis of the various factors like temperature, heart beat etc. There are various papers available that discuss about the prediction of heart disease, diabetics analysis etc. through this paper we are discussing a methodology where all of these can be done by using the single equipment. In IoT sensors assumes a significant function in putting away the information and making alert the clients at whatever point required. The IoT sensors gather the information from the sources consistently constantly the gathered information will be put away over the conventional worker or cloud worker. On the off chance that the gathered information is put away in conventional worker the client can't

get to the information from any spot generally speaking the world if the information is putting away in the cloud workers the information can be gotten to by the clients who approach authorizations for getting to the specific information. The information which is put away over the workers can play out the diverse business investigation. By doing diverse examination tasks the client can make expectations of the gathered information for improving their business. For making the distinctive investigation components the clients ought to have as long data they will get more exact outcome.

II. LITERATURE REVIEW

Author[1] proposes the concept of "smart and connected communities(SCC)" which is unified framework integrating smart cities and beyond. Here they develop IOT architecture and choose best IOT technologies and application. The author point out SCC vision to improve livability, preservation, revitalization and sustainability of a community while presenting Tresight which integrate IOT and big data concept for smart tourism and cultural heritage in Italy.[2] Aims the reviewing role of big data in IOT through various protocol and architectural structure and different methods for testing these protocol and security are proposed. Author [3] provide survey of technologies, protocol and architecture for urban IOT. This paper will present and discuss technical solution and guidelines for padova smart city project mainly performed with padova city municipality. Here different types of sensors and the networking of distributed sensing and different tool to manage analyze and understand data [4].Author [5] overtakes CPS which is M2M concepts and algorithm for matching decision based local knowledge because few existing decentralized solutions do not scale well. This is the reason

for M2M concept which is mainly used in various events on robotics, matching events etc. [6] focusing on the data regarding the technologies of bigdata and IOT and thereby focus on identification of the position of the patients in the rural people and tracking their health information. Here author mainly uses Map Reduce for the data visualization purpose.

III. RESEARCH METHODOLOGY

There are many types of architectures that were rolling out regarding patient's healthcare and also giving privacy to their information. Till now there is a patient's information on the database and whenever the patients come to the clinic based on the patient's health reports the update is happening as of now. Existing approaches for handling health records save patient's information in local databases and servers. This makes the system more vulnerable to data and thereby increasing the risk of ensuring security. Also managing data may be a challenge in existing works.

Cloud computing which is a trending technology for data storage can be used for storing patient's information. When the data is stored in the cloud, it is very easy to access those data. We can store the information within the cloud as either public or private. Here we are using the Amazon cloud storage (AWS) instead of local servers. AWS offers an honest range of services to store, access, govern, and analyze data so as to scale back costs, increase agility, and accelerate innovation. AWS Storage Gateway is a service connecting on-premises software applications with cloud-based storage.

The concept of Big data can be used in health care in order to make large access to data. Big data refers to a large volume of data which consists of structured data as well as unstructured data. The usage of Big data is a vast spread in present days in all Businesses and in Companies. The Map-Reduce functionality used in Big data plays a vital role in managing the classification of data. There are input data of various formats such as Text, Image, Audio, and video that may be present. In this case, similar kinds of data are classified as a set and also calculate how many similar data items are got.

Implementing the Internet of Things (IoT)-enabled devices in healthcare sector makes patients stay safe and healthy and empowering doctors to deliver excellent care with the help of technology. It is additionally increased patient engagement and satisfaction as interactions with doctors became easier and more efficient.

In this paper, we are aiming to present equipment where all these three technologies are combined in order to build a health care solution. Here we are considering the factors such as Heartbeat controlling, Temperature detection, and Diabetic measurement using this single equipment. We can perform temperature detection by using the LM35 sensor, PCB, LM298 sensor we have used the microcontroller of ATMEGA16 with LCD Display. We have taken the PCB mechanism on the device [6]. The LM35 is a temperature sensor that is used for sensing the body temperature as well as outside. We have used GSM Module for navigating the user location from time to time. Here the data is stored continuous manner over the server. Here the stored information over the server used for making different analytics for future predictions.

IV. CONCLUSION

The scope of technologies like Big data, Cloud Computing, Internet-of-things is unlimited. We all know about this fact but no one is thinking about the wider applications of these technologies in health sector. So through this paper we are trying to give a brief understanding of the concept of implementing these technologies together to make a better health care solution.

REFERENCES

[1] Sun, Yunchuan, et al. "Internet of things and big data analytics for smart and connected communities." *IEEE access* 4 (2016): 766-773.

[2] Ahsan, Umar, and Abdul Bais. "A review on big data analysis and internet of things." *2016 IEEE 13th International Conference on Mobile Ad Hoc and Sensor Systems (MASS).* IEEE, 2016.

[3] Zanella, Andrea, et al. "Internet of things for smart cities." *IEEE Internet of Things journal* 1.1 (2014): 22-32.

[4] Balazinska, Magdalena, et al. "Data management in the worldwide sensor web." *IEEE Pervasive Computing* 6.2 (2007): 30-40.

[5] Stoimenovic, Ivan. "Machine-to-machine communications with in-network data aggregation, processing, and actuation for large-scale cyber-physical systems." *IEEE Internet of Things Journal* 1.2 (2014): 122-128.

[6] Sasubilli, Satya Murthy, Abhishek Kumar, and Vishal Dutt. "Improving Health Care by Help of Internet of Things and Bigdata Analytics and Cloud Computing." *2020 International Conference on Advances in Computing and Communication Engineering (ICACCE).* IEEE, 2020.