Survey of Healthcare at Household Using Wearable Devices on Cloud

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ABSTRACT: Good Health is the greatest blessing of life. Life is a weary burden to a person of broken health. Therefore it is essential that maximum information about the patient's health condition and lifestyle should reach as many doctors as possible so that the best solutions can be formulated based on the individual or combined experiences of the doctors involved.In this paper we propose using Internet of Things(IOT) for providing a personal healthcare system as well as e-health services to the user. Wearable devices like a smart watch or smart shirt can be used by the user to keep track of parameters like heart rate, blood pressure, body temperature etc which do not require any expertise to be controlled. The home of the user can be equipped with smart devices like smart fridge, smart oven, smart television and so on which can collect information about the user's living behavior. The "home system" and wearable devices can send their collected data to the cloud for better storage and efficient analysis.

KEYWORDS: Internet of Things(IoT), cloud storage, wearable sensors, smart home system.

I.   INTRODUCTION

In the past 10 years, there has been a significant advancement in the field of healthcare. This has increased the life expectancy rate which means that there is a hike in the number of people in the "senior citizens" category. The healthcare industry should come up with more efficient facilities for people of this age-group as they are in constant need of medical attention. We propose using wearable sensors like smart watch which can collect information like blood pressure and body temperature and display it to the user as well as send it to the nearest clinic.We can understand the patient better through his/her lifestyle which can be known by installing a set of smart devices at home like smart fridge, smart television and so on.The data from all these devices can be stored on the cloud. Since we are all aware, there are a lot of health monitoring apps available on the appstore. All these apps collect data from the user and store it on their own cloud where the data is organized in different manner. We propose the implementation of cloud-based architecture which will identify the format in which the data is to be stored in the apps andsend the user's data to the app in that format. This will help any new health service the patient wants to use in obtaining the patient history without any human intervention.

II.   RELATED WORK

Castillejo et al. [1] proposes a sports advisory system which suggests exercises based on the data from temperature sensors and the user's health parameter values compared to stored threshold values. If the obtained values are lower compared to the threshold values, then a notification is sent to the nearest clinic regarding the fault in the user's health.
Maurer et al. [2]proposes a smartwatch to identify user surrounding based on lights and audio data. Better the light and audio quality , more accurate the data is and more helpful the diagnosis will be for the patient.
Miksch et al. [3]proposes an artificial intelligence agent to provide personalized-healthcare to the patient by monitoring the patient's behavior on a daily basis and giving feedback to the patient.`.
Mario et al. [4] proposes a healthcare system to monitor the daily routine of the user and shares the data with anyone using cloud service. This can give the patient an advantage of having his/her medical history being very accurately stored.

Loreto et al. [5] propose the implementation of cloud-based architecture which will identify the format in which the health data is to be stored in the apps and send the user's data to the app in that format. This helps in eradicating the need of every individual app to have its own cloud.

III.   SYSTEM ARCHITECTURE

The proposed system includes two sets of sensors: The wearable sensors like smart watch which will record the values for parameters like heart rate, blood pressure and so on. These data values will be sent to the user's mobile app where the latest five recordings will be stored to detect a particular pattern (if any). The other set of sensors are the home smart-devices like smart fridge and smart television which will record and find a pattern in the lifestyle of the user. The wearable sensors and the home smart-devices send their data to the cloud storage at regular intervals, mainly for effective backup. The cloud storage is designed to send the patient's stored data to the patient's familymembers, to the nearest clinic and to any new health related web service the patient wants to use that requires the patient's health history.
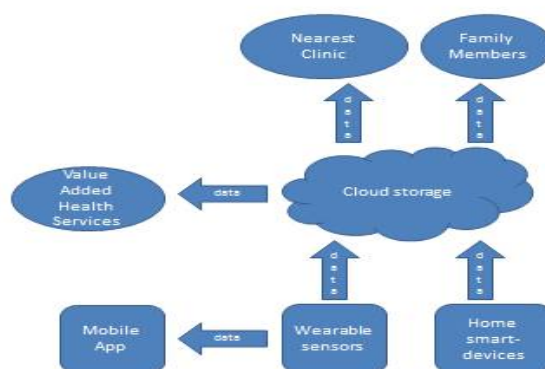

Fig. Proposed System Architecture

IV.   CONCLUSION

The combination of IoT and Cloud computing has multiple benefits in the field of healthcare. Implementation of cloud computing in the healthcare industry will continue to progress and quicken in the coming years. Escalating practice of healthcare IoT devices and the necessity to store and analyze enormous volumes of healthcare information to deliver health management services necessitates the need for cloud computing from both a business and technology perspective.

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