A Suvery Report On Role Of Iot In Healthcare

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Abstract: Nowadays, we all go through a lot of health issues due to unhealthy foods, environmental conditions, stress, and work pressure and so on. It's very important to take care of our health but sometimes we may not able to meet doctor by person. But we all know technology started to attach with humans in day to day life. One of those technologies that being used in most of the healthcare system is IoT. Using IoT one can easily monitor their health from being in home. In this paper, we survey on role of Internet of Things and how IoT devices being used in healthcare.

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I.   INTRODUCTION:

The Internet of Things allows user to set up a centralized network of interconnected IoT devices which can generate and exchange information within a single network. All that information can also be tracked and collected in real time, which provisions a passive group of analytics data.. It is an advanced facility where every data can be tracked and managed parallel while all the information is collected in a centralized database. The technology has a very large field of application in health care. Healthcare has the most efficient application of IoT than any other field. In terms of improvement for medical facilities, this means that a ordinary hospital can be changed into a smart hospital The use of IoT in medical field will have enormous benefits like health condition monitoring, personal-care, discovering new treatments for disease prevention and controlling diseases and diagnosis. A study by Statist shows that use of almost 161 million medical IoT devices will be discovered by the year 2020.IoT can make medical care affordable and efficient in the upcoming days. It can help in the development of more customized and advanced equipment. Automated treatment IoT devices increase the value of life especially for chronic patients and help doc to control medications adherence. Moreover, IoT will also enable patients to get best access to information, medical care thus, leading to lesser visits to the hospitals. In this paper, we broadly discussed about all the application of IoT in healthcare.

II. LITERATURE SURVEY:

a) MONITORING HEALTH CARE USING SYSTEM BASED ON INTERNET OF THINGS[1]:

IoT in hospital therapy is geared toward improving people lives and enables more healthy way of life by using wearable connected IoT devices. The idea of linked IoT Medical care gadget and smart IoT gadgets holds large capability no longer only for hospitals, but additionally for the self-care of humans in preferred. Hospitalized sufferers whose medical repute requires close tracking that may be continuously accumulated with IoT-gadgets. This form of solution uses sensors to gather accurate clinical records and additionally use cloud to collect and store the clinical facts after which send the ones analyzed data for similarly analysis and screen. It replaces the traditional idea of health specialist visiting hospitals to test the patient's important signs and symptoms, as a substitute provisioning a contiguous automatic way of information. The major goal of this work is to offer a detail evaluation of this area of studies and IoT sensors used in health monitoring gadgets.

In this paper , they have got monitored coronary heart charge and additionally the calories burnt in an day of human using IoT sensors. Here they've used sensors implanted Apple Smart Watches to monitor pulse rate, energy burnt and blood pressure.. The monitored information is finally stored at IoT sever.

b)IOT TELEMEDICINE FOR SENIOR CITIZENS[2]:

Elderly living human beings needs more care furthermore when they're residing by their self. IoT presents so many Healthcare systems to help the aged living alone human beings. The IoT Telemedicine system is primarily based on monitoring heart rate, blood drift monitoring and BP monitoring. The physiological indicators are taken from the patient's body and offered on cellular telephone. Generally, the normal physiological signals are first taken from elderly human beings. The body is taken down (no strange signal has happened) and is described as a ordinary baseline physiological sign (Base Line Data) for the affected person. When the elderly living alone feel uncomfortable at some time and the living conditions are poor, the tracking module is placed on and the physiological alerts are monitored. The physiological signal presented in the mean time is at once compared to ordinary baseline sign (Base Line Data) of the affected person. When the diploma of mismatch is greater than 30%, the telemedicine system at once sends a notification sign to the doctor, and those problem indicators are sent immediately to the cloud to store the data through the Wi-Fi for future reference.

c)AN IOT SMART HOME ARCHITECTURE FOR LONG-TERM CARE OF PEOPLE WITH SPECIAL NEEDS[3]:

People with special needs require special attention and they need to be monitored at regular intervals to take care of their needs .Here they have designed a smart home system to monitor those people regularly using IoT. The aim is to monitor the day to day activity of people. We need to know their activity around the home and their movement inside the house. This smart homes includes a wide types of IoT sensors and IoT devices like IoT Sensors on Every water pipe to identify when the water pipe is being used. Sensors on all the electrical plugs. Sensors on doors and windows . Pressure sensors on the user bed to know when the bed is being occupied. Computers all over the home for use by both patients and caregivers.

d)A PERSONAL HEALTH CARE OFFICE CHAIR [4] :

Nowadays, due to prolonged sitting people go through a lot of health issues like pain in muscles, rheumatic disorders, neck pain, pain in joints etc. Bad sitting posture also can lead to different kinds of health issue. To overcome this

issue, A personal health care chair has been developed using IoT. This chair identify and look upon how long a human sits over the chair, as well as monitors the sitting position of the person. Warnings are displayed on the Liquid Crystal Display (LCD) and also signaled through sound from alarm. A Wi-Fi module is used to send the data to the web for recording. The system can detect persons sitting durations as well as sitting postures.

e)SMART HEALTH BAND USING IOT[5]:
Nowadays, humans are mostly depends on the technology and we are fighting very hard to make it even more advance. Humans nowadays made their living more difficult and busy. In their busy time they don't concern about their own health. To overcome this a smart IoT based health band has been developed to automatically monitor the health of humans. This IoT based band can monitor body temperature and pulse rate of a human. After sensing the body temperature and pulse rate, the information is transfer to the cloud called "Thingspeak".finally, a graph will display the sensed temperature and pulse rate. This information is then viewed on a mobile application. Hence, user can view the pulse rate and body temperature by using this application. In some time, if the pulse rate suddenly rises/falls above or below the threshold value, then a message will be sent to the doctor. Smart Health Band is made up of   Arduino Uno,   Wi-Fi module, LilyPad temperature sensor, batteries pulse IoT sensor.

f) TRANSFORMATION OF HEALTH CARE SYSTEM USING INTERNET OF THINGS IN VILLAGES[6]:
IoT plays a very important role in health care for the all people irrespective of their location. The people living in urban get advance medical care easily, but those who are in the rural and remote areas struggling lot to get valued medical care. They need to travel so long to go to hospitals. Using IoT devices this can be changed. Here they have used IoT devices to monitor human health which is very useful for the people living far away from hospitals. The wearable device used here uses Bluetooth technology, radio signal and mobile for the communication among different modules. Like other IoT devices, the process starts by the collection of information from the human to monitor body heat, pH value, BP, heart rate etc. The first module is fixed along with the slippers and the second module is attached along with the patient's clothes. The information collected from the second module is sent to the first module with the help of radio signals. In the first module, the collected information is processed by the microcontroller and communicates with phone with the help of Bluetooth technology. Once the data is received in phone it is transferred to the patients and also to the doctors in case of any emergency situation.

g) SMART BELT : A WEARABLE DEVICE FOR MANAGING ABDOMINAL OBESITY[7]:
To lead a healthy life the most important parameters are healthy diet and more physical activities. But nowadays due to lifestyle, people forgot to take care of their diet and also we don't find sufficient time to do exercises. This leads to so much of health related issues like heart diseases , Blood Pressure, obesity etc. The most embarrassing problem we all face is abdominal obesity which is mainly due to

unhealthy diets and other reason could be wrong posture. Sitting in a right posture will help you to reduce most of the belly fats. So we can use smart belt which will help us to get our right posture. They chose a technique of mixing sensors with a pressure sensor and an acceleration sensor. Added to that , they have measured and calculated values of the pressure sensor and angles of the acceleration sensor. With Smart Belt, excogitated a technique of detecting an wrong posture which may be a reason of abdominal weight problems.

h) IoT BASED SMART HEALTH CARE SYSTEM TO PREVENT SECURITY ATTACKS IN SDN[8]:
 IoT plays a vital role in healthcare not only by using smart health care system but also enables remote monitoring of patients health using IoT devices which then get stored in the cloud for further analysis. As there is a drastic growth in IoT devices mainly sensors, phones communication has been made wireless. These sensors can be connected with humans to detect any abnormal health conditions and the data is then sent to medical team. The cloud serves as a great medical care platform for analytics, security of the sensed clinical facts. The monitored medical reports are made on top of Software Defined Networking from which the SDN controller is incorporated at the Amazon cloud storage.

i)IoT FOR HOSPITAL MANAGEMENT[9]:
 IoT is not only used in medical care but also in hospital management for providing safety to the patients by monitoring them in regular intervals and also by regulating the power consumptions in hospitals. Problems like patient's safety during hospital fires and also some rare but condition known as vascular air embolism. Integrating sensors in hospitals to monitor environmental conditions has been proved boom to the hospital industry as it not only gives good experience to patients and also reduce labors needed. Some of the methods being used are Saline Holder for prevention of Air Embolism using IoT, Gas Detection for preventing Hospital Fires. Motion monitoring to reduce high power consumption.

j) SMART HOSPITALS BASED ON IoT[10]:
IoT is not only used in medical care but also in hospital management for providing safety to the patients by monitoring them in regular intervals and also by regulating the power consumptions in hospitals. The one thing which is very important in hospitals is hygiene. Hospital environment must be kept clean and also the air quality should be checked properly at regular intervals. Here they have proposed a system which will help the hospitals to maintain good hygienic environments. They have used so many type of sensors to monitor the hospital environment like gas detector, smoke detector sensor, oxygen sensors, noise measurement sensors, poisonous gas detector sensor and many.

III. CONCLUSION:
The IoT kick started the evolution of technology in the health sector that is enabling a new way of game-changing and life-enhancing services across the world. The IoT has useful potentials to bring economical and social advantage to the citizens, patients, government sectors, and businesses

through highly advanced and improved service delivery and customization. It helps to monitor the patient's health remotely and also provide so many benefits in hospital management. IoT devices play a vital role in health care. Here we have presented some of the IoT application in health care.

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