Health Monitoring System in IOT

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ABSTRACT

In this project, we are monitoring various parameters of the patient using the internet of things. In the patient monitoring system based on the Internet of things project, the real-time parameters of a patient's health are sent to the cloud using Internet connectivity. These parameters are sent to a remote Internet location so that users can view these details from anywhere in the world.

There is a major difference between SMS based patient health monitoring and IOT based pa tient monitoring system. In the IOT based system, details of the patient's health can be seen by many users. The reason behind this is that the data needs to be monitored by visiting a website or URL. Whereas, in GSM based patient monitoring, the health parameters are sent using GSM via SMS. This is one of the Latest Electronics Project Ideas related to Medical applications which engineering students can select as their final year project. One more benefit of using IOT is that, this data can be seen using a desktop computer, laptop, using an Android smartphone comma using a tab or Tablet. The user just needs a working Internet connection to view this data. There are various cloud service providers that can be used to view this data over the Internet. Things speak, Sparkfun and IOTGeek are a few famous and easy to use service providers among these.

Keyword — Internet of things, healthcare, sensors network, Arduino UNO, Raspberry pi, Real Time patient monitoring system.

I. INTRODUCTION

In recent Ageing population is significantly rising in recent years than ever before. According to report the number of individuals age 50 or above will surge to 2 billion by 2050, another report published by the World health Organization (WHO) revealed that in 2013 there was 7.2 million healthcare worker shortage and predicated to cross 12.9 million by 2035.

These elderly population suffer from chronic diseases among the most that are commonly monitored and treated are blood pressure, diabetes and cardiac arrhythmia. These typical diseases combined with the naturally occurring diseases; continuously decline in cognitive and physical abilities of elderly people, which reduces the chances of many aged people from living independently, in their own homes. For many years traditional exams were the standard way to measure blood pressure, heart beat and glucose level

in a specialized healthcare center. Conventional health monitoring models are inconvenient and time-consuming for all involved.

Basics of health monitoring system

The health monitoring system provides multiple options to change the traditional management of patients. Moreover, this solution reduces the cost of health care and helps the hospital to improve the treatment process, and provides a remote health monitoring system. Read this article to find out 5 benefits you can get from building your own health monitoring system.

Importance of Health monitoring system

There are two different terms compute and storage. To decrease the bandwidth and networking cost ,it is beneficial to use computation of data instead of bringing data to computation (e. g if we want to send a file ,then instead of sending a file to individual only send a link to receiver). In cloud model, compute to storage has been applied using restricted programming like key value pair, MapReduce .

II. EXAMPLES OF HEALTH MONITORING SYSTEM

Blood pressure monitor This easy-to-use inflatable cuff fills with air, squeezing your arm then automatically calculating your patient's heart rate and blood flow by measuring changes in artery motion as it deflates. Some blood pressure monitors take multiple readings to report daily averages. Home monitoring can assist in early diagnosis of conditions like diabetes or kidney dysfunction which contribute to high blood pressure. It can also make healthcare delivery less stressful.

Continuous glucose monitor

Managing diabetes effectively requires continuous blood sugar monitoring. That single drop of blood your patient tests at home can also help to:

Monitor medication effects Track how diet and exercise affect blood sugar levels. Demonstrate how stress or illness affect blood sugar levels. Track progress toward treatment goals. Inform both patient and provider when it's time for a follow-up appointment. Anticoagulation testing device Patients with atrial fibrillation, artificial heart valves, deep vein thrombosis (DVT), or pulmonary embolism are at risk for developing thromboembolism.

Anticoagulants like warfarin, however, have a narrow therapeutic window. They can also interact with some vitamin K-rich foods and other medications. Higher doses can cause bleeding. That's why these patients require continuous blood testing. Care providers require more than the data collected when patients come into the lab every few weeks for a blood draw. Patients have to remember to visit the lab, find transportation, secure childcare, or take time off work to attend appointments during business hours.

Anticoagulation testing devices usually require just one drop of blood and about one minute to yield results. Patients then send the gathered information to their providers and await instructions on how to proceed with treatment.

Electrocardiography (ECG) devices Whether in handheld, wearable, or patch form, these de vices can help detect life-threatening conditions. ECG can catch symptoms of arrhythmia, myocardial ischemia, and ST depression— they may even alert clinicians to cardiac chamber abnormalities and drug toxicities.

These remote patient monitoring devices record electric impulses from a patient's heart and transmit them to a clinician in real-time—even during endurance or sports training. Such accessible information can help your team tweak care plans on-the-fly, before a patient pushes themselves beyond their heart's limit.

Heart rate monitors These wearables tell you how many beats a patient's heart takes per minute, so your team can tell them when they should be exercising

more or less robustly—and taking medication more or less frequently.

Portable mobile devices automatically record and transmit a patient's heartbeat data during errands, exercise, stressful events, and even sleep—which helps clinicians detect both symptomatic and asymptomatic arrhythmias, as well as atrial fibrillation after cardiac ablation. They've also helped clinicians diagnose and treat syncope and presyncope.

III. REASONS TO BUILD AN HMS

Here are the main advantages of a health monitoring system and the great reasons to develop it for your hospital to transform it into a Smart Hospital.

Real-time health monitoring systems using IoT can help doctors prioritize patients, and provide urgent care to those who are in the most danger thereby saving lives. More competent patient management can help utilize the resources of the hospital more wisely and save money. It is easy to use the system for patients and medical professionals. The remote health monitoring system is especially useful to monitor patients with chronic diseases. Most chronic diseases are incurable, so it is necessary to monitor the state of the patient while at home, and quickly respond if health indicators worsen. The HMS is convenient and portable so it is very convenient for doctors to manage patients from one app, and it is also very easy for patients to monitor their own health by wearing a lightweight device like a bracelet.

IV. CONCLUSION

In the study, the wireless sensor technology is combined with the human health monitoring terminal based on the Internet of Things to test the health-related indexes. The test results are analyzed. It is observed that the human health monitoring system of the Internet of Things is relatively stable and has functions such as an accurate collection of human health data, real-time monitoring and alarming, and evaluation of subjects. The subjects were assessed for temperature using the thermometer, which provides the temperature values of 36.4, 36.7, and 36.5 (°C), respec tively, demonstrating relatively accurate and stable testability. Similarly, the pulse rate monitoring module employing the ECG observes the test outcomes of 78, 78, and 79 (times/min), respectively, similar to the medical pulse meter results.

The human health monitoring system based on the Internet of Things designed in this study has completed collecting the user's blood pressure, pulse, body temperature, heart rate, physio logical information, and other vital sign data, which is suggested in practice. After long-term data collection, factors related to a potential risk prediction should be further explored in the future to expand the application of human health monitoring systems based on the Internet of Things. This will provide a scientific and effective basis for preventing and controlling chronic high-risk diseases in the near future.

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