WNS- Real time Health Monitoring System

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ABSTRACT

The growing rate of population, straight replicate on healthiness problem and social care. Technology dependent living has convert the concentration argument for investigators, to overcome challenges in health care arena. Technology has show vital role in achieving these critical tasks. Although practice of technology resolution must be considered, applied and authenticated using skilled information. There is open need to succeed or even decrease healthcare charges while educating the excellence of service. In order to overcome these tasks, the instantaneous monitoring healthiness status of body can be used to classify health status for particular organ; therefore, it enabling early provision of medical facility will be possible. Thus, the development of a Proposed health monitoring system, which has ability of detecting incapacitated patients remotely, is the attention of the study presented in this article. The expertise used in this paper concentrates on the capability to take care on a person's physiological data to detect body health which can assistances in treatment shortcomings. This is achieved by precisely processing and examining the developed data from devices while communicating the uncovering of a health position. The finding body part healthiness status that will improve experimental conclusion, it supports for deliver treatment.

Keywords: WNS, **Internet of things; hospitals; wearable sensor networks; medicine alert.**

INTRODUCTION

We use the WNS and IoT in this Proposed system to track various parameters relating to patient health. Using Internet Connectivity, in the patient health monitoring system focused on the Internet of Things concept, the real-time criteria of a patient's health are sent out to the cloud. Such parameters are sent to a remote location on the Internet so that the user can access such information independently from anywhere on the geographic position. However, a patient caregiver can be conveniently tracked remotely by combining multiple technologies, such as Android phone apps, wearable devices and sensors. Healthcare services are most frequently visited in our busy lifestyle to meet the needs of people because the massive population growth of our new and stagnant healthcare systems contributes to more patients. On the other side, the innovation in healthcare to cope with these demographics of modern technologies is still minimal. In reality, like other people, we care deeply of our well-being and are constantly monitoring our physical activities using unique health and activity trackers anywhere at any given moment. Therefore, while we do our daily work, we worry about our sick family member and the wellbeing of people with disabilities as we leave them alone for a long time. Hence, integrating technology such as healthcare sensors and wearable with our healthcare systems is becoming important, so that everyone can reside in a healthier and more comfortable climate. With the rising incidence of chronic diseases associated with ageing, the raising demographic for decades to come would have significant consequences for the health care system. Therefore, they propose a system that calls for continuous monitoring of the well-being of the elderly in real time in order to eliminate chronic diseases, thus eliminating hospitalization that stresses the health systems.

Objective

- Respective sensors check health status particular of body organ and to analyses the body is healthy, seek or damage and based on analysis system automatically send the notification for how to take a precaution.

● Test the health parameter after some time intervals, if any problem arises related to the health parameter of the patient, then the system will automatically send the notification to the relative patient. System detects the affected body organ with the help of sensors, and suggests which medical test is mandatory for better diagnosis.
● System suggests the nearest hospital and diagnosis center's according to your diseases.
● In very emergency situation system send the alert message to ambulance, hospitals or relative with GPS location with the help of GSM modem.
● System suggests the precaution based on environmental parameter for some specific diseases like Asthma.
● System gives the notification for eating a medicine at right time and system prevents you for having overdose of medicine.
● System suggest which medicines are dangerous to any specific diseases.
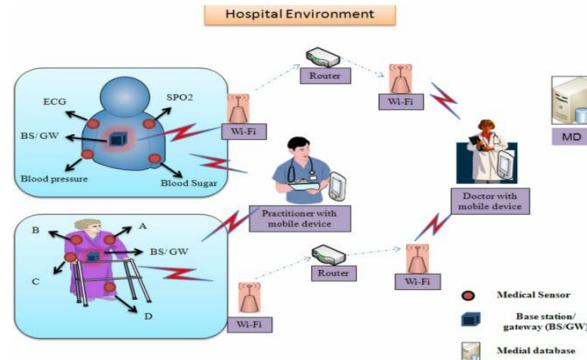● System store patient's medical history which helps for better treatment

Fig.1 WNS Health Monitoring System

LITERATURE SURVEY

This section explains the study of literature. I have been studying various articles to research the existing system.

Shubham Banka et al. [1], The authors proposed and proved the concept for an automated program that ensures constant tracking of different health parameters and identification of some form of illness or condition that prohibits the patient from repeated hospital visits. The program could be set up in schools, so it will capture so archive large volumes of data in the electronic database.

Amir et al. [2], The entire mechanism is connected through Wi-Fi component ESP8266. The medicinal details should be entered via the application. The medicine box works once the user has entered the details including the timing and the slot from which the medicine should be consumed. The microcontroller collects information according to the user's given data via the application and feature. The medicine box then produces data according to the patient's behavior and this data is submitted to the application via internet. Such element is exposed in warnings style on the network.

V. Vippalapalli et al. [3], It provides a tele-monitoring program that enables the doctor to display the critical parameters of the patient in real time directly and seamlessly on a web page and does not need to provide any unique specifications on the PC; all he wants is an Internet connection. A home-based LabVIEW application that is embedded in a home PC is required for the patient side

Sadek I. et al. [4], The success of the research work linked to IoT sleep trackers and noticed that it was important to resolve certain issues. In addition, some potential approaches from researchers and security experts are identified for mitigating these threats. In addition, researchers recommend certain things for end-users and service providers to deploy a resilient IoT infrastructure to ensure a secure sleep tracker.

P. Gupta et al. [5], The system's key goal is to provide people with more and more effective health care by creating a networked knowledge infrastructure such that the professionals and physicians can make practice of this information to suggestion a reckless and dependable solution. The final model is well equipped with the features that allow doctor to examine his patient from anywhere and anytime. Emergency situation will also be operated on to send an emergency mail or fax to the doctor with the latest state of the patient, including detailed medical records. The software has been introduced as a smartphone device to render the product more available and more usable everywhere in the globe.

D. S. R. Krishnan et al. [6], It takes less than a minute for the health tracking program to measure ECG, Blood Pressure and Temperature Control tests. Scope also declines due to the mixture of no. of medicinal data sensors on a single piece relative to the conservative scheme. Thus, complexity of the time-cost is minimized.

H. N. Saha et al. [7], Authors examined the IOT-based technologies currently being used as smart hospitals, their mechanisms, benefits and disadvantages. Smart hospital or Telehealth has been performing successfully as designed and implemented. Telehealth telegraph has proved to be reliable, powerful and user-friendly device with various advantages. As dynamic as the Internet, the IOT-based health services framework calls for the design of systems that are even more advanced to overcome existing disadvantages.

Sathya et al. [8], Experts also incorporated IoT in centralized control of health networks. The portable sensors with IoT would have an enormous effect on the life of a user, and even if they are away from home and doctor, this allows them to minimize fear of risk. The sensory data may be collected in work settings or at home. In fact, the problems of identifying, evaluating and forecasting the illness are often presented and should be tackled in order to ensure smooth transition into the medical sector.

Poongodi, T. et al. [9], E-healthcare network offers a technical platform that allows use of wearable and implantable health sensors to enable tracking of different variables such as health , fitness, behaviour and other chronic information for the persistence of everyday quality of life for persons. This article's main goal is to explore how IoT may be connected to portable and implantable technologies in the healthcare system. The wearable and implantable devices are likely to revolutionize mobile technology that are presently and in the distant future very old.

Shivleela Patil et al. [10], This prototype offers the real-time solution for reliably observing the patient's heart pulse rate. This system may be adopted in the hospital's general wards to help the patients understand their performance and use. The data collection systems may be further used in other areas, such as illness detection, study, etc. Using this program can may harmful cardiac attack incidents for a patient.

Outcome of survey

In above survey the following are the challenges observed in health monitoring system, in which the proposed methodology tries to overcome.

i)   Monitoring of particular body organ.
ii) Analysis of organ health status.
iii) In existing system, they can't suggest test for affected body organ.
iv) Suggest nearest medical, pathologist center and hospitals.
v)   There is not any consideration in existing system for environmental parameter.

In proposed scheme we will solve this complete problem.

Scope of Proposed System

The most exciting situation in the medical field is WSN-based health monitoring. This development in our home based is for, confined to bed patient. For the older citizen who lives alone or with a compact family, too. Patient existence is not open to anyone. This project will prove very beneficial when family members are forced to go out for any emergency work.

Physically incapacitated patients may yield benefit of this creativity. They discovery it actually hard to go to the specialists on a everyday basis or for those patients who want the doctor to trail them continuously.

WNS-based health monitoring is very useful when tracking & documenting and specialist care changes in the patient's health restrictions over time. Doctors can mention individuals changes and the patient's history to the patient when recommending more therapy or medicines.

Hospital visits are reduced, because medical care from everywhere is feasible.

The time and cost of hospital visits for normal routine check-ups would reduce.

Data concerning persistent health restrictions are stored in the cloud. Therefore, it is more effective than manually

keeping records on typed papers kept in the archives. Or even the multimedia documents that provide a graphical view of state of health. Cloud storage has low data loss risks, and is consequently a protected storing result.

OUTCOME OF PROPOSED SYSTEM:- RESULT

The projected "WNS-based health monitoring" model relates with the health limitation of the patient. Consequently, system scalability and accuracy will be tried to accomplish high performance in dealing with the health parameter of the disabled and injured and to monitor their health effectively in real time. Furthermore, the program will be versatile so as to extend the population and patients using the system accordingly. In addition to the existing program, we will provide diagnosis of health status, help for recovery from injuries, monitor bedridden patients, precautionary measures according to the medical history of the patient. We are going to achieve machine performance in terms of accuracy, consistency and scalability.
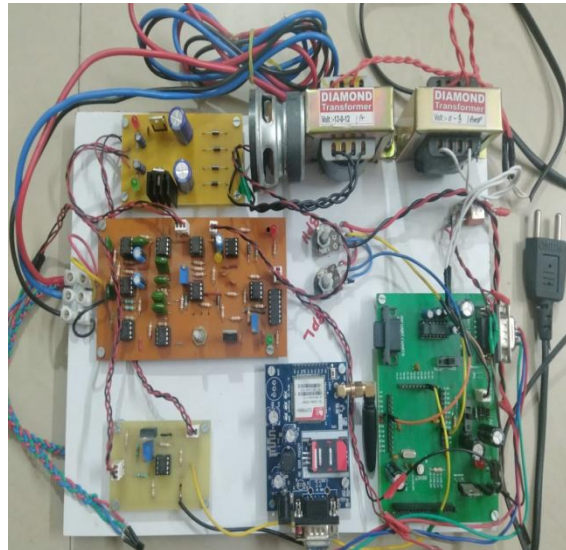
ADVANTAGES AND APPLICATION

1) User friendly
2) Remote monitoring of parameters
3) Audio and visual indication.
4) Instantaneous technique.
5) Low power consumption.
6) Operating at low voltage hence safety.
7) Better resolution +/- 1 BPM.
8) Heart beat rate on LCD display.

APPLICATIONS:

1) This system can be very efficiently used in hospitals for monitoring of patients.
2) It may be used in pathology labs.
3) On time military applications.
4) It is used in treatment and surgery.
5) This system used in medical procedure for diagnostic therapy.
6) It is used in delivery of healthcare.

FUTURE SCOPE

The interferences and noise include in the main sensed ECG signal can be minimized by the advanced signal conditioning technique like filters using AGC can be implemented.

Diagnosis of patient can be display with prediction of heartbeat rate i.e. Low blood pressure, High blood pressure by implementing the logic for the program of microcontroller.

The record of ECG signal, Heart bit rate can be stored using E-PROM IC's.

PC interfacing can be done for displaying the ECG signal of patient on monitor screen.

Selecting the proper sensors, the movement of cardiac valves (LUB-DUB and MURMUR sounds) can be amplified.

The whole Biomedical monitoring can be done i.e. Different parameters like body temperature; blood pressure can be collectively measured and displayed.

CONCLUSION

In this paper, IoT efficiently links patients, clinics, doctors, and hospitals to organize and orchestrate diagnosis and treatment across a wide variety of locations. During the pandemic, data protection and confidentiality are the key concerns with healthcare systems because it passes across the unsecured system. The patient's care record which is made up of personal records, clinical conditions, diagnosis results, and associated medications, which considered sensitive data. Hackers may change the health-related details resulting in misdiagnosis, or incorrect disease assessment leading to unsuitable treatment, thus increasing the rate of mortality. Medical data transmission tracked through IoT devices is vulnerable to security concerns.

The privacy and security issues are found at the patient's records and hardware-level in terms of compatibility due to the needs of each component like storage space, operating system, and network architecture.

The integration problem at the devices level exists because of the design of the applications used because some of the devices support all programming languages and others support only particular languages. IoT tools and biosensors used in healthcare systems such as COVID-19 continuously track vital parameters. Thus, the uninterrupted wearing of sensors can cause skin rashes and also consume more power.

The researchers of cost analysis need to consider developing low-cost experiments of drug solutions allowed by IoT. During the epidemic, healthcare facilities and clinics also contend with large numbers of patients, with numerous medical personnel undertaking various duties. Accurate identification of patients and personnel is key to ensuring adequate data protection in these cases. IoT on a smaller scale demands that handheld devices incorporate sensors for data collection and that centralized servers handle patient requests to ensure that all patients can access medical facilities using mobile devices such as a smartphone.

A critical problem with using IoT in COVID-19 patient monitoring is related to the wide heterogeneity of systems, devices, services, and platforms operating available and possibly used for new or improved applications. Therefore, heterogeneity is also a non-negligible concern. From the above-designed project, I can conclude that we are able to transmit the data which is sensed from remote patient to the server PC by using wireless transmission technology, at receiver the data is received and displayed on the PC of a doctor. Also if the doctor is not present on campuses he will receive SMS on his mobile phone in case any parameter goes beyond the normal range. The leads of the ECG sensor must be stuck properly to the patient, which is nearest to the chest side of the patient. So that we get more and more correct ECG.

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