A RESEARCH PAPER ON IOT BASED HOSPITAL

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Abstract

A patient's health must be treated within time and with right attention. In India, it also happens that, due to delays in care, the patient experiences a serious health condition and often death can also occur. Critical-condition ICU patients require constant care. Their health statistics have to be reviewed from time to time, but often if their health needs urgent attention, complications can arise if the urgency of the patient has not been notified within time before the nurses or doctors have allocated them. In addition, real time parameters are not up to the mark in clinics and hospitals, which may interrupt the patient's study. This project provides you with an efficient solution to the above problems through the use of sensor technology and IoT. By making use of IoT a patient's health can be constantly kept in check. The setup is made such that from a distance, the patient's health can be monitored continuously and information of the necessary parameters of the patient's health can be obtained and right action can be taken within time.

Keywords: *Patient, IoT, ICU, Health care, Sensor, Intelligent system, Hospital policies, Efficient resolution.*

I. INTRODUCTION

Information and Communication Technologies solutions for modern healthcare systems continuously grow worldwide. An increasing interest in wearable sensors has been seen in recent years and many devices are now commercially available for personal health care and fitness. In addition to existing smart medical devices, researchers have also considered applications of such technologies for long-term tracking, management and therapeutic access to physiological information for patients in remote health monitoring systems [1]. Based on current technological developments, you can easily foresee a time in the future when a two to three day period of continuous physiological monitoring using less costly wearable sensors is carried out for your routine physical test. Developing an intelligent system for patient

monitoring in the medical setting. Indeed, due to the severity of the health condition of patients staying, one of the specialist areas of a hospital that is Intensive Care Units (ICU) is of considerable significance and hence requires special consideration. These units are typically fitted with a range of medical equipment that is operated by a multidisciplinary medical staff to track ICU patients in real time due to the severity of patients treated in the intensive care units.

Medical field is the backbone of any country. Medical field technology plays a big role when it comes to patient care. Technology is big when it comes to giving the patient the best type of quality care when they are in the hospital. In the old days doctors or nurses would just communicate with patients manually which causes mistakes. These errors are now dramatically decreasing with electronic health systems. Statistics have shown that both nursing errors and improved patient care have been minimized with the use of electronic health systems. Over the years, our culture has changed and electronic health care programmers have been developed that have greatly strengthened our health care systems. The business is globalized; society is obsessed with medical problems, loss of patient information from records, too much. Electronic health care services are increasingly evolving. Several considerations need to be taken into consideration to establish an efficient healthcare tracking system, such as data access, accuracy, and reliability. The most critical aspect, however, is data freshness, which must be well supported by healthcare systems concerned with people's health during runtime. More specifically, when approved individuals track the symptoms of patients, the data must be refreshed with high frequency so that the platform of the doctor regularly updates to draw the latest data from the warbles of the patient. The Arduino board gathers data from sensors and then sends it to the IoT website via a wired network [2].

In addition, people find nursing staff, the monitoring and life support devices necessary to provide continuous care to patients that are severely ill and medically unstable. The latter receive special care and are monitored in real time by the medical team through a breathing assistance system and the decision making support that is, for instance the ECG. To help the patient to stay alive, a partial or total ventilator support is mandatory depending on the severity of the condition in which the patient is located. It appears of course that the respiratory support justifies a significant monitoring system in ICUs that is very particular and intricate. The limits of the efficiency of these systems are apparent in the face of these demands. They were the subject of a detailed analysis in the state of the art, well supplied. People have a very alarmist monitoring system with a significant rate of false alarms, among many limitations, that hinder the tranquilly of the patient [3].

An analysis of the value of smart and connected health care using the Internet of Things will be carried out in order to try to address these defined problems. In order to recognize the causes of the inefficiency of health care in the ICU, this analysis will be carried out to recommend suitable strategies to enhance the capacity for better decision-making, which could contribute

to better treatment. For patient monitoring in ICUs, we have built an intelligent and ubiquitous system. The so-called ADSA (Automatic Detection of Risk Situations and Alert) framework is based on an IOT architecture, including a collaborative network of medical sensors. The key contribution of this work is the introduction of many wireless technologies with a modern unifying architecture. In addition, to store and analyze the data obtained, we have set up a decision support platform. A physical organization as well as the logical architecture is proposed for the novel patient monitoring system.

Tele-ICUs are units where nurses provide 24/7 care, support and advice from a distance to remote ICUs. The exchange of data between the tele-ICU and the ICUs is assisted by different kinds of health information technology (IT). ICU nurses are able to monitor patients, track patients and medical equipment through a camera in the patient space, and interact with ICU nurses and providers. Several studies provide a detailed overview of the evolution of the activities of the ICU, the ICU organization, and ICU nurses. Tele-ICUs are a relatively new phenomenon, but the "oldest" ICU has been alive for 15 years already. ICUs actually track almost 10 percent of patients in American ICUs. Multiple clinicians can be part of the ICU team: board-certified, critical care nurses, clerical workers and, in some cases, a pharmacist. ICU workers (including residents on duty at the ICU) receive ICU staff orders or feedback and will have the ability to learn new skills and knowledge. For the ICU model, tele-monitoring is critical [4]. ICU workers receive patient data in real time and can thus identify patient status trends; they can then alert ICU staff. On workstations that are normally composed of several monitors, a two-way camera, microphone, and a high-speed dial telephone, Tele-ICU doctors and nurses work. Clinical data captured about the ICU patient are directly streamed to the ICU. Tele- ICU clinicians are hooked in to information communicated over the phone or entered into the pc from the bedside to tell them the present state of the patient. They monitor numerous clinical indicators, such as blood pressure, heart rate, ventilator settings, and oxygen saturation. Other data such as patient care plans, laboratory results, and X-rays are electronically sent or faxed to the ICU. Most ICU software uses MSG to alert the doctor to possible significant changes in patient status [5].

IoT applications are changing businesses and bringing more efficiency by analyzing relevant data across the sectors like Home Automation, Smart Cities, Environment, Energy, Retail, Logistics, Agriculture, Health and Lifestyle. Along with development of IoT technology, opportunity to address upcoming challenges and research directions created. Efficient monitoring in ICU, CCU or ICU on wheel is an indispensable need in healthcare. Doctors often tend to provide detailed details about the patients under care on a marginal basis. Currently, nurses continuously track such critical care, but the availability of trained nurses and other healthcare employees is of great concern, particularly in developing countries such as India and China.

Another benefit of the proposed method is to greatly reduce the risk of human errors, as one of the findings by the US Institute of Medicine argues that medical errors remain as the number 3

killer taking the lives of around 400,000 individuals per year. In short, the proposed intelligent real-time IoT-based ICU Pa-patient monitoring system would avoid human errors and allow less support staff to continuously track patients; it will also provide efficient communication for accurate information. The system of real-time patient monitoring gathers information from bed-side patient monitors. This data is uploaded to the cloud for further processing by the Intercommunication Network System. This data is further processed by in-smart software agents and alerted by special monitoring cells and doctors [6].

II. CONCLUSION

IoT (Internet of Things) based ICU (Intensive Care Unit) patient monitoring system may be a system, which measures the patient's vital sign, pulse rate and temperature constantly. This technique also sends this data to a dedicated website via the IOT system after calculation. Where each doctor could easily see their respective patient data from anywhere all the time. In contrast to other methods, this method is less expensive and more accurate. Data for patient health parameters are stored in the cloud. It is therefore more useful than having the records stored in files on printed documents. IoT based ICU monitoring system is an enhanced system that helps in monitoring ICU patients without any manual intervention. In this paper, we have temperature, blood pressure and pulse rate reading results are monitored. These sensor signals are sent to Arduino via wired cable. Arduino is a micro-controller board which runs a dedicated program; there is no OS, just your code. Here patients' body temperature, blood pressure and pulse rate is measured using respective sensors and it can be monitored in the monitor screen of computer Using Arduino as well as monitoring through anywhere in the world.

III. REFERENCES

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