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Review of Patient Monitoring System

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Abstract: ***Health care becomes a major problem in the economic and social life. From the last few years health problem is increasing specially in aged people who are suffering from chronic diseases. AS fast as the population of the world increasing health problems are increasing. To solve the health care related problem many technology take place in which IOT play an important role. The fields of computer science and electronics have merged to result into one of the most popular technology Internet of Things (IOT). Healthcare technology has endures drastic changes over the past few decade and continue to evolve. In the patient monitoring IOT works on different parameter of the body. Internet of thing in the medical field brings out the solution for effective patient monitoring at reduced cost and also reduce the tradeoff between patient outcome and disease management. There are different technology uses which describe how a patient monitors in a hospital, ICU, and at home. In IOT patient's parameter get transmitted through a medical device which is a sensor's parameter via a gateway where it is stored and analyzed .This paper is based on the review of different technology used in patient monitoring.***

Keywords: Internet of things (IOT), CoAP Protocol Raspberry pi, Ubiquitous computing and wireless sensor networks, RAS.

I. INTRODUCTION

The internet of things, also called the internet of objects, refers to a wireless network between objects or thing which is embedded with sensors, electronic device, software technology and network connectivity. This technology not only used for sensory devices but also in communication, recording and display device. In the last decade the healthcare has drained considerable amount of attention In the traditional approach healthcare provider need to visit the patient's region for necessary diagnosis and advising. Now- a- days chronic diseases is increasing among people, this is due to different risk factors such as dietary habits, physical inactivity, alcohol consumption, among others.

[1] In India, the causes of death are increasing day by day. The main reason is that patient is not timely and properly operated. Some real time parameters are not operated in clinic and hospital. Because it is not possible all the facility that the patient need is all time available. To solve this problem ICU patient monitoring is also developed. But it is difficult for each and every person to afford it for a long period. To deal this situation Patient Parameter Monitoring System using Raspberry Pi system is developed which is used to measuring monitoring various parameters like temperature, ECG, heart beat etc.

In [2] an architectural based ontology is developed which is capable of monitoring the health of patient and recommend some workout routine with chronic diseases.

According to World Health Organization, 4.9 million people die from lung cancer from the consumption of snuff, overweight 2.6 million, 4.4 million for elevated cholesterol and 7.1 million for high blood pressure. There is a prediction that if the ratio of this risk factor is not controlled, deaths from chronic diseases will increase by 17%, which means about 64 million people, some if not monitored and treated early, they can end the patient's life.

In [3] an IOT remote health care monitoring system is created which describe patient condition through web browser. In this CoAP used as an application level protocol for remote data access and representation.

In [4] there is an explanation how wireless health monitoring system work.

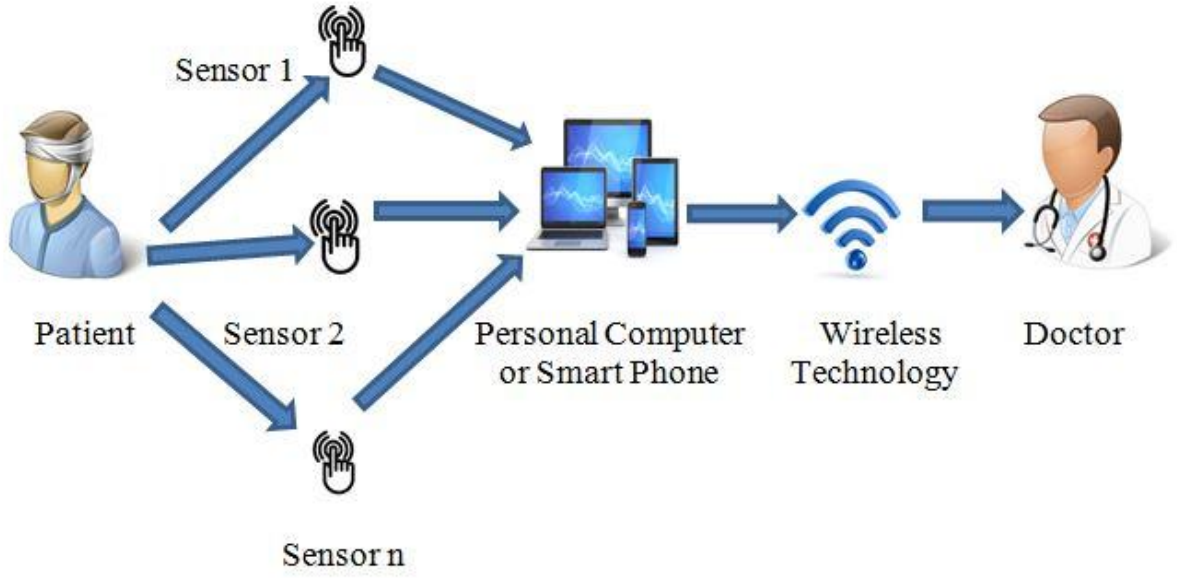

Fig. 1 Architecture of wireless health monitoring system

The above diagram is the general architecture of wireless health monitoring system. In this architecture there are various sensor attached to the patient. These sensors continuously measure their body parameters like heart rate, body temperature, blood glucose, blood pressure, oxygen ratio etc. These sensors transmit the signal to the personal computer, smart phone. A wireless technology is used for communication.by using this technology collected information are transmitted to doctor or hospital.

[11]In this a healthcare system is demonstrated in which health of patient is monitor remotely via internet. Guidance awareness is done in a authenticate manner by sharing information.

TABLE 1. Comparison between existing healthcare system.

Approach	Services and technologies	Sensors
Body Sensor Networks For Mobile Health Monitoring	Cardiac rhythm monitoring, cardiac rehabilitation, copd problems, discharged patient monitoring	ECG, accelerometer, blood pressure monitor, pulse oximeter, weight scale and GPS
Context Are intelligent wallet for healthcare	Intelligent wallet for supervised monitoring of individuals, layered approach	Motion Sensors ,environment sensors
An IoT-Aware Architecture for Smart healthcare Systems	Remote monitoring, management of emergency situation	Temperature sensor, barometric pressure, ambient light, 3-axis acceleration and ECG sensor.
AMON:A Wearable Multi parameter Medical Monitoring and alert system	**W**rist worn medical device ,monitoring and alert system for cardiac/repertory y patient	SPO sensor, ECG sensor, blood pressure sensor, acceleration sensor and temperature sensor

II. LITERATURE SURVEY

[6]Wireless Sensor Network (WSN) technology enabling the feature of ubiquitous sensing involves the ability to measure, infer & understand environmental indicators from delicate ecologies & natural resources to urban environments. IOT with the help of sensors and actuators enables the sharing of information in order to develop the Common Operating Picture (COP). Moreover, integration of IOT with the RFID tags leads the technology to the next revolutionary level of the future internet. The

IOT technology can further be facilitated with the cloud computing technology in order to centralize the IOT domains so as to access it from anytime & anywhere across the globe. One Such example of cloud implementation is Aneka- that provides accessibility for both public & private clouds depending upon the services claimed by the customers or clients.

[7]IOT technology is implemented in various medical parameters in order to promote Healthcare communication method. During earlier times of patient health evaluation, doctors or physicians need to physically check the patients' health behavior & to regularly monitor them. This thus leads to the situation of chaos & confusion while dealing with the large number of patients at a Time. Now the upbringing of IOT completely changed this pattern. With the help of incorporation of various sensors (temperature, oximeter), PIC 18F46K22 MICROCONTROLLER is integrated in order to provide a common gateway of communication among sensors. Various security features is also indulged with this project, involving the AES128 bit encryption over data transmission through password protected Wi-Fi module ESP8266. The project can efficiently implement with low power consumption capability, easy to setup, high performance & time to time response facility.

[8]Moeen Hassanalieragh, Alex Page, Tolga Soyata have proposed this cloud based processing. In this wearable sensors equipped with IOT for enabling observation and recording of data in home and work area for more duration than current duration. It provides a better opportunity for an individual need and treatment.it also reduce the cost of treatment.

[9]This paper is mainly focused on continuous monitoring aspect of home patients & helps doctors to monitor patient health parameters easily(temperature, heart rate, pulse rate, glucose, etc.) by detecting it, processing it, & sending this data over a wireless. This helps to take care of critically ill patients in order to save their lives in almost every hospital in the ICUs.

[10]IOT can be elaborated as the merging of two vast fields thus resulting into the most notable technological advancement; the fields are computer science & electronics. Various projects for health care systems are laid down having the base as IOT in order to provide a revolutionary leap in the medical sector. This thus provides excellent health care at affordable costs through the help of desired healthcare applications.

III. Conclusion

As the cases of chronic diseases is increasing day by day. The system patient monitoring is developed, to treat the patient with chronic diseases. The system is wireless. Different technology is used to overcome the issue in patient monitoring. The aim of this technology to improve the quality of patient treatment. To consider an emergency case of patient an ICU patient monitoring is created but the problem is that it is too expensive to afford everybody because nobody knows how much time it take to recover patient. An architectural ontology was created which guide the patient health diet and workout routine. A CoAP protocol is used to remote data access and representation. The main objective is when the doctor is not available in hospital or at home of patient to take care by using these technology doctor can guide their family and caretaker. This will save the life of patient as well as time or money.

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