

Internet of Things for Human Health Check Up

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ABSTRACT

This paper describes a system that provides the ease to health industry by creating a network of all the stakeholders connected through internet-of-things. The system comprises of the health management device that comprises of temperature sensors, blood sugar monitors, pressure sensors, heart rate monitors which is coupled with a microcontroller or a standalone device which will receive information by means of communication module.

Keywords: Health Management, Internet of Things, Communication Module, Microcontroller, Blood Sugar Monitors, Temperature Sensors, Pressure Sensors,

1. INTRODUCTION

The present invention relates to the field of Internet of things (IOT) in Healthcare Industry.

A number of advancements are made in the technology area of sensors. In remote care management, patients and healthcare providers are able to recognize any issues in the health and address the problem immediately before they become serious.

The goal of this research is to develop a smart health management system. Our research team has developed a smart networked health management system that involves online management of blood pressure, blood sugar, etc and regular checkups on the status of health. The invention holds a promising health monitoring system and improves health status through proper monitoring and communication module.

The IoT enabled health management system comprises of the following:

1. A pressure sensor to sense the blood pressure of the human body;
2. A blood sugar monitor to monitor the sugar level of the human body;
3. A temperature sensor to sense the temperature of the human body;
4. A heart beat monitor to measure the heart beating rate of human body; and
5. A microcontroller coupled with all above said sensors to send information to the above said health forums with the help of small communication module.

The implementation and description of the smart health management system would be discussed in the preceding sections of this paper.

2. DESCRIPTION

The paper discusses in detail on an IOT-enabled health management system. This can be very useful for the aged people as well as individuals affected by the chronic disease.

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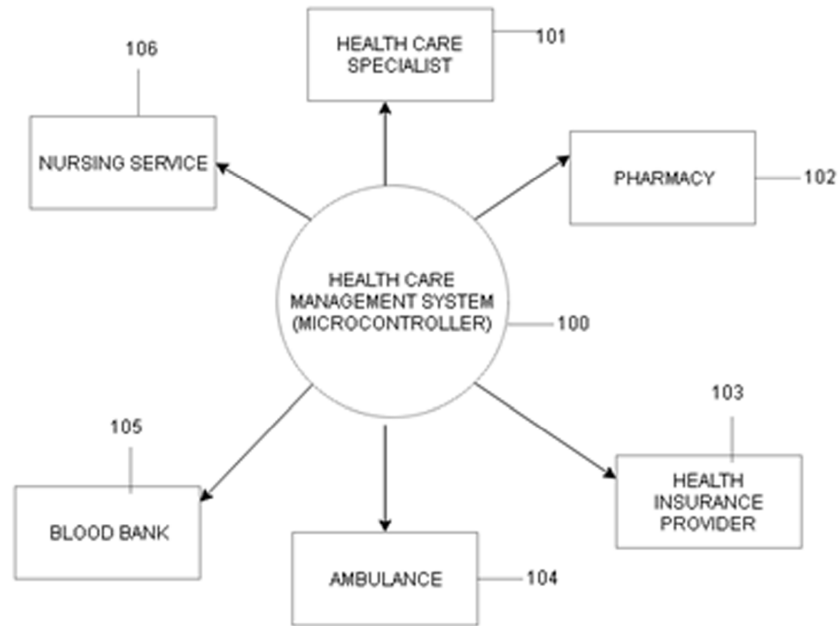


Figure 1: Microcontroller of the Health Management System

This IOT-enabled health management system is having a health management device and a microcontroller. As shown in the Fig. 1 it illustrates the microcontroller of the health management system. The microcontroller 100 comprises of the options of contacting a health care specialist 101, health insurance provider 103, nursing services 106, and emergency service of ambulance 104, blood bank 105, and pharmacy 102. Whenever a person wants to contact any doctor or specialist regarding any of the health issue, he has to go to the standalone device/ microcontroller 100 and input the option of the health care specialist 101. The system automatically sends the basic information of the blood pressure, pulse rate, heart rate, and blood sugar level of the individual with the help of different sensors present.

Similarly, whenever the person wants to bring any medicine he can contact the pharmacy by choosing the pharmacy 102 option from the microcontroller 100. At the same time if the doctor gets the sample of blood and basic reading such as pulse rate, blood pressure from the patient and after the examining the sample the doctor will send the details of the prescription to the pharmacy with patient's address. The pharmacist will send the required medicine to the patient's home.

If there are any requirement of nursing services and health insurance the patient can contact to them by choosing the option of nursing service 106 and health insurance provider 103 from the microcontroller 100. The microcontroller 100 can contact with the respective services and send the information to them with the help of GSM module.

The invention also facilitates an 'one-touch' option to alert emergency services such as an ambulance 104 and the system will automatically assign the nearest available vehicle to reach the patient place. In addition, the device will also intimate the patient's primary care provider, his guardian in the family about the fact that an emergency request has been raised by the patient. In case of requirement of blood, the system can inform the blood bank 105 with the help of GSM communication module.

The health management device comprises of temperature sensors, blood sugar monitors, pressure sensors, heart rate monitors, etc. The health management device may be a smart watch or a wrist band which can be wearable by the patient and it keeps monitoring the blood pressure, pulse rate, blood sugar levels of the person. The health management device is connected to the stand alone device/micro controller by means of communication module.

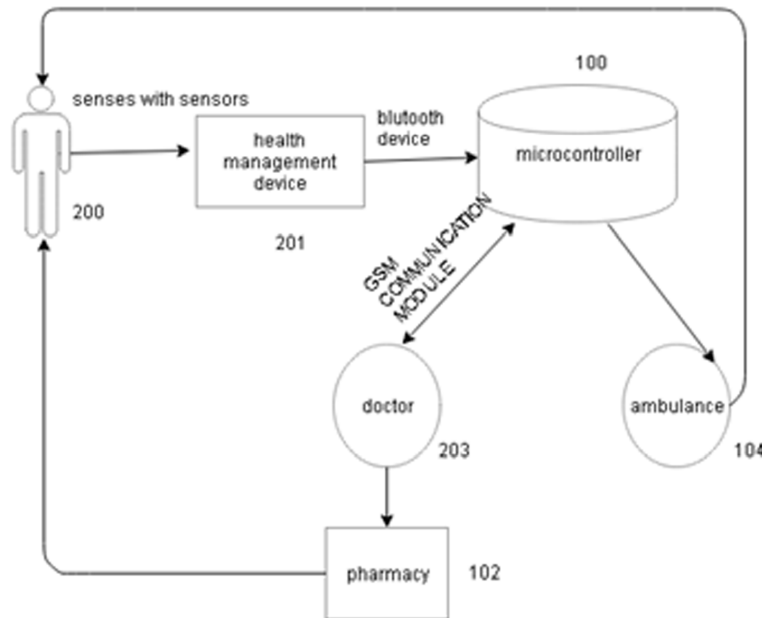


Figure 2: Working Scenario of the Health Management System

In case of elders present in the family or individuals affected with any of the chronic diseases, the health management system is the best option to take care of them in the home without the help of any nursing services. The individuals affected by chronic disease and elders have to wear this health management device in their hand. This device is having various sensors such as pressure sensor, temperature sensor, blood sugar monitors, heart rate monitors which takes the reading in every two minutes. Some threshold value is fixed in the device which whenever reaches, the device informs to the microcontroller by means of Bluetooth communication module.

Fig. 2 illustrates the working of the health management system. The health management device 201 could be a smart watch or a wrist band worn by the person 200 which sense the blood pressure, temperature, and pulse rate, heart rate with the help of the different sensors such as pressure sensors, temperature sensor, pulse and heart rate monitor.

Then the health management device 201 keeps checking the readings in every two minutes and whenever the device senses the reading more than the fixed threshold value then it will intimate the microcontroller 100 with the help of Bluetooth communication module. Then the microcontroller 100 will send the information to the doctor 203 with the help of GSM communication module. If there will be any emergency, then the microcontroller 100 will send information to ambulance 104 with the address.

The doctor 203 after examining the sample will inform the patient by sending the information to the microcontroller 100 and also sends the details of the prescription with patient address to the pharmacist 102. The pharmacist will deliver the medicine to the patient 200.

3. IMPLEMENTATION

The present invention and its advantages can be implemented as described below. The system comprises of the health management device that comprises monitors which is coupled with a microcontroller or a standalone device which will receive information by means of communication module.

The microcontroller comprises of the options to contact with health care professionals, health insurance provider, pharmacist, nursing service, facilitators such as blood bank, emergency services and health forums are connected through internet-of-things,

The health management device may be a smart watch, wrist band or the like which is having various sensors to sense the blood pressure, pulse rate, temperature and sugar level and intimate to the microcontroller in case of any emergency.

Further the invention also facilitates an 'one-touch' option to alert emergency services such as an ambulance and the system will automatically assign the nearest available vehicle to reach the patient place.

In addition, the invention also facilitates the patients to stay in touch with health communities, register for awareness programs, visit workshops and participate in online communication with other health seekers.

4. APPLICATIONS

The invention as described in the drawing finds applications in Home, Hospital, Office, Industry and School.

5. CONCLUSION

The present invention provides a system to enable a Health-World wherein a network of all the stakeholders of healthcare such as healthcare seekers, health care specialists, pharmacy, health insurance providers, Nursing Staff, facilitators such as blood bank, emergency services and health forums are connected through internet-of-things.

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