Smart Healthcare Monitoring for Drivers

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SMART HEALTHCARE MONITORING FOR DRIVERS

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Abstract. Internet of Things is used very widely used by everyone at every-place. There are so many applications where sensors are utilized and some of the applications are medical care, home appliances, and vehicles and so on. Daily there are so many accidents are happening due to health issues, driver sleepiness or maybe due to uneven roads. To avoid the health issues this smart healthcare system is introduced in vehicles. Mostly the expensive cars are getting the inbuilt sensors for vehicles like Mercedes-Benz. If the cost of a smart health monitoring kit is available at an affordable cost then it is very easy to avoid accidents for people who drive the vehicle. Here the health report is recorded continuously and the abnormal records are sent to the healthcare provider and also the transport office. There are some parameters that are used to monitor and they are pulse rate, body temperature by using the sensors and that data is transferred to the mobile with the help of Bluetooth. So the transport corporation takes the actions by arranging the vehicle for the people who were in the vehicle and the driver is taken care of with the help of an ambulance.

Keywords: GSM, GPS, Internet of Things

1 Introduction

Health is an important factor in one's life. We need to maintain health conditions at our best. Some of the parameters of a human are glucose levels, the temperature of a person, heart rate, etc. To measure these parameters we use healthcare monitoring systems. Currently, these types of systems are used in medical fields but also used in all kinds of fields like industries, home needs, and electronic appliances. There are two types of monitoring of the healthcare system and they are wired and wireless connections. In a wireless connection, there are again classified into two types and they are smart wearable devices or implantation n the body itself. In a wired connection, the sensors are having connections with the help of wires and a person cannot involve in all activities. To avoid that problem, smart wireless devices are used but they are more expensive. The sensors like heart rate monitors, pulse oximeters, body temperature are connected for the human with the help of jumpers. In India, there are so many accidents happening with the driver's rash driving, and also health problems.

While driving they do not take much care about their health because they just want to earn money. There are some drivers who are very old and weak heart and for them, it is very important to keep their health properly. I have used the sensor for the drivers and those sensors are temperature sensors and pulse sensors along with GPS trackers to track the vehicle if anything goes wrong for the driver. By that, we can save the driver as well as passengers in that vehicle.

2 Existing System

People are not taking health seriously and driving continuously without any rest for the body. Mainly the drivers are not concentrating on their health and due to that so many health issues are raising and to avoid that there are some people who gave a solution for health. P.M. Durai Raj Vincent, Jayapradha Soundarajan [1] used IoT and cloud technology and also RFID technology is used as a security measurement for protecting the patient's life. They used multiple sensors to collect different data from different users. Priyanka, Jashanpreet Kaur [2] have used the parameters for path identification using ACO and the parameters are path length, path identification duration, and local efficient threshold, energy, time and latency. These parameters are used to identify the shortest path with less time has been possible which is more energy proficient and this optimization is used in healthcare services. Kavita Jaiswal, Srichandan Sobhanayak, Bhabendu Kumar Mohanta, Debasish Jena [3] introduced how data is integrated using Rasberry pi and Docker container which stores the data in the server and sends the information for the user. Here Raspberry Pi collects and stores the medical data through the sensors attached. The received data can be transferred to the user through mobile apps. The information provided through apps improves the health of the patients. Lavanya. S, Divya Bharathi. J, G. Lavanya [4] introduced an IoT-based intelligent home-centric healthcare platform that seamlessly connects smart sensors attached to the human body for physiological monitoring for daily medication management and also offered different types of medical health applications with small changes. Mumtaj.S.Y, Umamakeswari.A [5] proposed an intelligent real-time patient monitoring system that can be used in hospitals and homes and parameters such as temperature and ECG as well as to detect any abnormality accurately. The system sends an alert message to the caretakers and doctors in case of any abnormality. It also enables the clinicians to optimize the usage of available medical resources and minimize the costs in monitoring the patients. The adaptive learning ability of the developed system improves the forecasting accuracy and results in enhanced decisions. The system remains more reliable and robust.

There are some more people who found the smart healthcare and they are Abdulhamit Subasi, Mariam Radhwan, Rabea Kurdi, Kholoud Khateeb [6] introduced smartphones, health checking gadgets, and individual computerized collaborations in the health sector. They offer quick information at a cheaper cost which enables them to keep if for the users. The materials as well as methods used in human activity recognition by using data mining techniques that are necessary for the health applications. There are different kinds of approaches to health monitoring and one of the

approaches is they have used the data of a person with the help of a network by using the optimization technique which is an ant colony. Another approach is by taking the real-time values of a person with the help of a sensor which is used as wearable devices or wired devices. In one of the papers, they have used the sensors for heart rate and temperature but there is a disadvantage in that paper and that is, we cannot know the location of that vehicle so that the driver and passengers in the vehicle may be at risk.

3 Proposed System

In this system, we are using the GPS location to know the illness of the driver with the heartbeat to the particular owner of that car and also to the hospital. The message will be sent to both people with some parameters like temperature, heartbeat and also the exact location of that person. So, they can be alert with the message and save the person from the risk. In this, we have included a pulse sensor that monitors the heartbeat of a person continuously. The temperature sensor gives the driver temperature values and also displays on the LCD screen, the GPS tracker is to track the location of that particular vehicle and here we get the location through the link in the form of a message so that the ambulance can get the exact location and the customer get another vehicle without any problem with the help of transport owner.
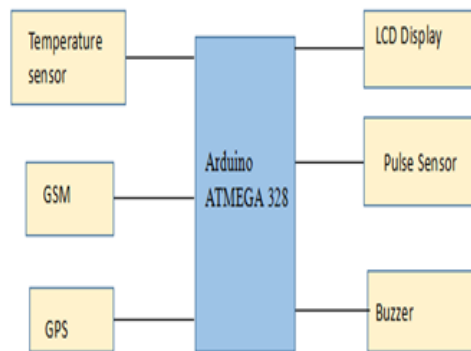
4 System Architecture and Analysis

Fig. 1. System Block diagram

This block diagram contains an Arduino board which is a type ATMEGA 328, Temperature sensor, GSM module, GPS module, LCD display, Pulse sensor, and Buzzer. Each contains its own functionalities where the Arduino board is connected with all other sensors and other hardware things. The temperature sensor gives the surrounding of the vehicle and it is connected to the Arduino kit.

GSM module contains the sim slot which is the micro size and that is connected to GPS and LCD screen with the help of Arduino. It also contains some ports like mic and spk where we can connect to the external sources but the drawback is we cannot keep the volte sim cards in this slot. GPS gives the exact location of the kit where it is presented and sends the message to the relative or family member or friend and the ambulance when he/she is ill while driving the vehicle. The buzzer is used when the kit is ready with a power supply. The LCD screen is 16*2 which gives the message and it should be connected to the Arduino kit with the help of using jumper wires. Here pulse sensor which is used for checking the pulse of a person and it gives the response to those people and there are some conditions if those conditions exceed then they receive the message from that person with the location.

5   Implementation

There are many open source platforms and one of them is Arduino and this is easy for the beginners. The work of the Arduino is to take the input from the user through the sensors and read the functionalities of the code which is written by the programmer and gives the output in the form of LCD Displays, through mobiles and other parameters.

It contains both the Analog pins and Digital pins that are used for the sensors and the best example for the usage of digital pins are LCD display and Analog pins are used for the sensors like pulse sensor. There is an advantage of Arduino and that is if any new things you want to add then you can directly update the code and dumps the code in the Arduino.
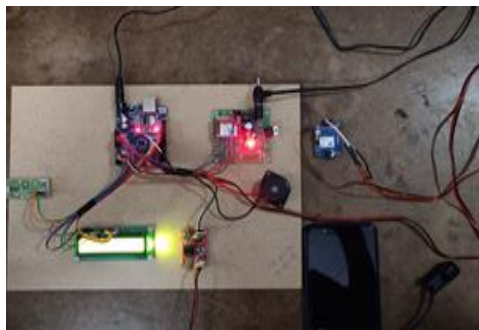
6   Result Analysis

Fig. 2.   After connecting all the sensors

Figure 2 implies that the LCD, Buzzer, GPS, GSM are connected through the power supply. GPS sends the exact location of the driver who is in risk. The buzzer also activates when the values of temperature and pulse are abnormal.
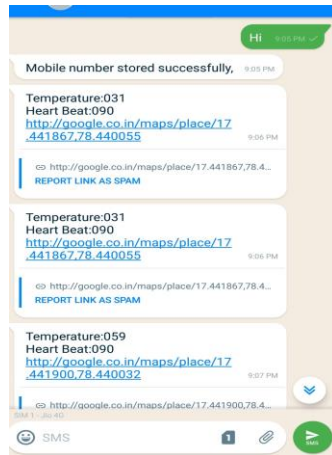
Fig. 3. Message is sent to receiver

Fig. 4. Location from the sender

The message is sent to the receiver where the heartbeat and temperature is shown and by clicking the link we can find the person who is having the health problem and the emergency vehicle will be sent.

7   Conclusion

There are many approaches to monitor healthcare and in India and so many accidents happening with driver's rash driving, and also heart-related problems. There are some people who are very old mainly for heart patients it is difficult to find if there is no location. So for that, the GPS location is present for the driver and if his/her condition is very poor the message will be sent to the transport owner and friend or relative. I have used the sensor for the drivers and those are temperature sensor and pulse sensor along with the GPS tracker to track. By that, we can save the driver as well as passengers in that vehicle. In the future, we can add a camera in the kit so that we can see the driver's condition and passengers count in the vehicle. If the driver is sleeping then we can alert him/her by some buzzer sounds.

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