Smart Health Monitoring System

Team Nibble Team 9

Abstract

- We are planning to make a fully functional health monitoring feature with several other addons which will make it user friendly. For monitoring we will use heart-beat sensors, Blood pressure monitor, reed switches, GPS tracking and several more so we get the real time data and use it to analyse the users present state and then use it for monitoring the users health also we will be making an alert system so that all the things are reported in Realtime to the concerned people like the doctor, family members etc so that the calamity if anything occurred can be prevented fast in the least time possible.

Aim

1. To ensure a healthy life without frequent health checkups.

2.To keep a track a health conditions so that one might be given an alert in case of sudden heart attacks ,dehydration or other health problems.

3.To share the health conditions which are of primary concern with family members to keep a track.

4.In case of accidents or in case of old people who are unaware of their past records it would help the doctors for diagnosis.

Procedure

Over here we are using the statistical average values published by various health organisations as a condition to detect any sudden change in heart rate ,pulse ,temperature,fluid content and various general parameters used for a healthy living.

Components

MPU6050

Tilt sensor

Temperature sensor

NFC Reader

Heartbeat sensor

Shock Sensor

Feasibility

This project is quite feasible as it is often seen that young people due to lack to regular health check up suffer heart attacks which cannot be predetermined.

Apart from that we have planned to fit a tilt sensors on bottles to keep a track of amount of water consumed by a person per day approximately.

We have come up with an idea where a user has a nfc tag fitted onto his arm so that if a person by chance becomes unconscious people or doctors can scan that tag to help him out.

Main System

- In the main System we are using a DHT11 Temperature and humidity sensor, a heartrate sensor and a accelerometer gyroscope.
- In order to make the system cost efficient we are using the minimal possible sensor and we have related the data from the sensors in such a way that it is self sufficient to predictthe state of the user

Modes Of operation

Exercise Mode

- Accelerometer
- Heartrate Sensor

Panic Mode

- Heartrate Sensor
- Temperature
- Time Average

Attacks

- HeartRate Sensor

Exercise Mode

- In the Exercise mode we can calculate the time for which the exercise was done, the Heartrate as well as the distance if it is a linear motion during the exercise
- Also we will warn the user regarding dehydration and fatigue, in advance to avoid severe health Conditions
- Smart Bottles

Smart Bottles

- As a part of the exercise mode and the system we will be equipping it with sensors which can sense the amount of water being consumed by the user and monitor his dehydration levels based on the exercise.
- For this we will be using a tilt switch and general analysis

Panic Mode

- In the panic mode we know that the person enters into a state where he fears something and gets tensed , also the reaction time taken to this inversion of stage is too low so we can use this time average to find the panic stage
- As a matter of safety, just in case if the device detects the attack wrongly it will give the user option to prove that It is normal using feedback systems.
- In case the panic attack is confirmed the nearest hospitals and the nearest police stations are informed in order to probe into the incident and get the things resolved without much loss of time.
- This mode was specifically designed by us , by keeping women security in mind.

Attacks

- Nowadays cardiac diseases and cardiac strokes are common and in most of the cases the user dies due to loss of time in reaching the hospital and inform the people around him that he is suffering from the stroke.
- This system will ping the nearest hospital inorder to get the ambulance at the place as soon as possible.

Mobile App and Web app

- The device can be controlled using a mobile app and several details can be accessed from the web app that we have designed the demo of which will be given during the review in order to explain the functionality in a more efficient way which cannot be explained over here

Additional Functionalities

- As shown earlier also one of our sub parts is the smart bottle.
- The other one is an identification system which can allow the hospital to get the patients data and previous medical records so that pre analysis can be done as soon as the users alert has come to them and meanwhile the ambulance reaches back.
- This system will use a NFC based system to identify the user using an card which will be fixed on the device to get the user id, and all the other data will be there in the cloud and will be updated in real time based upon his daily activities so that the hospital make sure the appropriate treatment is given to the patient.

Overall Integrity

- The whole system will be integrated so that the user can get the data and retrieve the previous ones
- For the integration part we will be making the device wearable using Arduino Liliypad(which we could not get) so now we are using the bulky mega module with a raspberry pi which sends the Realtime sensor data to the cloud from these arduinos via serial communication.

Our Git Repository

- Here you can find all the time to time changes and the things which we did in the last 24 hours during the makeathon:

- https://github.com/dwij2812/Robotics-makeathon