CARE ASSIST

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Abstract: Internet of things (IOT) is an integrated part of future internet and could be defined as dynamic global network infrastructure with self-configuring capabilities based on standard and interoperable communication protocols. It refers to a network of internet-connected objects, which are able to collect and exchange data using embedded sensors. Raspberry pi is an evolution in the world of computers. The bulky PCs are converted into a small single board embedded circuit which can perform almost all the tasks that a computer does. It is Bluetooth and wifi enabled. What is more astounding is that, it just cost a mere 35$(2500 INR) and enables millions of applications. Care assist is a module which enables the doctor and the care taker to keep a record on the patient's health condition. It uses IOT, cloud storage and data analytics with the help of raspberry pi 3 to send live updates. It alerts in an emergency as well as responds to the user. Our aim is to maintain the health and save life using IOT.

Keywords: Raspberry Pi, Module, Cloud Storage, Health, IOT.

I. OBJECTIVE

Health is wealth. Everyone desires to be fit and healthy. But ever since beginning of time people fear death. From figure.1, According to the report of WHO, the top causes of death worldwide are Ischemic heart disease and stroke [1]. These diseases have remained the leading causes of death globally in the last 15 years.
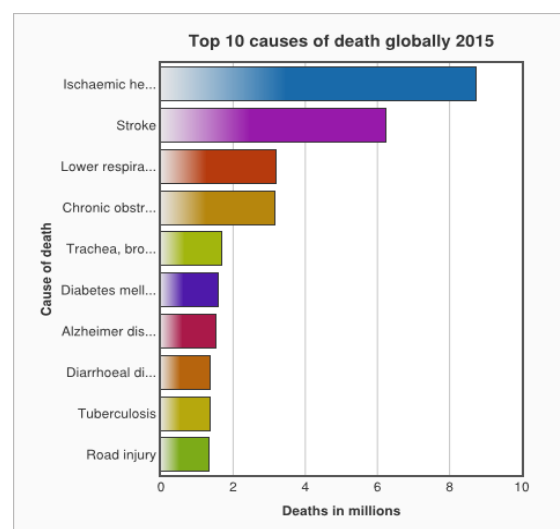

Figure.1 Bar chart

There is an immense growth in technology to access everything using internet. Why not in health? So we came up with an idea "Care Assist" to save life, valuing time in an emergency as well as to retain good health using IOT.

II. INTRODUCTION

The Internet of Things (IOT) could be a thought reflective of a connected set of anyone, anything, anytime, anyplace, any service, and any network. IOT provides solutions for wide range of applications in every field. Similarly it provides attractive applications in medical and health care like enabling treatment and medication at home along with efficient scheduling with limited resources by ensuring its best use and service.

Wearable (wrist band) is smart electronic devices that are worn on the body by a consumer which often track fitness and location with sensors. One of the important features of this health wearable is its ability to connect to the internet and enable data to be exchanged between a network and the device. In our model wrist band has a solar panel to get charged.

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The Raspberry Pi is a low cost, credit card sized computer that was originally developed for computer science education with 64 bit processor. It is a wireless Internet capable system-on-a-chip with 1GB RAM, connection ports, a Micro SD card slot and an audio/video jack. In our model Raspberry pi plays a very important role. In addition to its features it is connected with a SIM module.

Care Assist is a virtual doctor which keeps a track on your health. It consists of a wearable and a Raspberry pi. It uses cloud to store the data and IOT to connect the patient, doctor and the care-taker. Using the data analytics platform Care Assist provides insights about patient's health condition based on historical data and reacts immediately in any abnormal situation.

III. LITERATURE SURVEY

Pooja Navdeti et al [2], the system is designed to be used in hospitals for measuring and monitoring various parameters like temperature, ECG, heart beat etc. The results can be recorded using Raspberry Pi and are sent to server using GSM module. Doctors login to a website and view those results. Their drawback is that this model can only be used for patients admitted in the hospital.

C Midhunda et al [3], the system is designed to monitor the present condition of the patient in an ICU. The results are shown with the help of Raspberry Pi and sent to the doctor using GSM module. It provides real time video and displays health parameter of the patient in the web page and alerts are sent in any unstable situation. Their drawback is that it is applicable only for patients in ICU and even large storage is required.

M.Wcislik et al [4], the system monitor's patient's body temperature, pulse rate, ECG wave and patient's body position using ARM cortex M4F micro controller. Bluetooth connection is used for connecting microcontroller and Android phone. Android app is created for monitoring these values. It sends the irregularities in the user's health. Their drawback is that Android app is supported only by android phones and range of Bluetooth is very short for communication.

R.Kumar et al [5], the system monitor's patient's heart rate, body temperature, Respiration rate and body movements using Raspberry Pi. Using Internet the Raspberry Pi board act's as a server and will send data to the web server .The heart beat record is monitored through portable computer or laptops. If the parameters are abnormal, then it will automatically send alert message to the doctor. Their drawback is that the system has only alert message to the doctor. If doctor do not check the message the patient's life is in risk and moreover it is a bulky circuit.

Megha Koshti et al [6], the model is a prototype of patient monitoring system using wireless sensor network. It is created between Zigbee modules and Arduino Uno board to process the data information and displays on the monitor. The ECG signal and heart beat can be monitored through laptop or personal computer wirelessly. Their drawback is that it is not a wearable and can be accessed only in Wifirange.

IV. PROPOSED METHODOLOGY
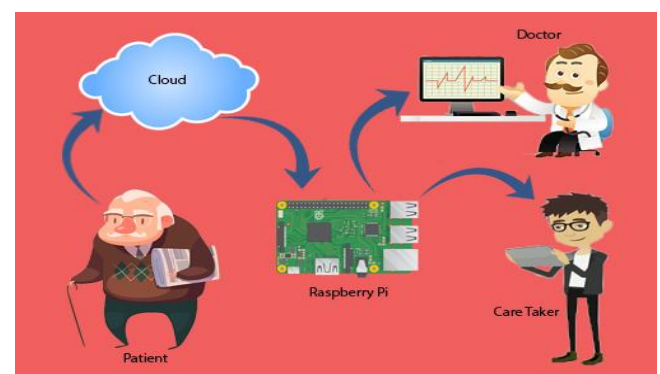
Figure.2 Care Assist Architecture

Care assist helps in maintaining good health. It connects three entities patient, doctor and the care-taker. From figure.2, the primary component wearable worn by the patient consists of Heart beat sensor, Pressure sensor, Heat sensor, GPS, SIM slot and solar panel. It will calculate and send the data to the cloud every second. The Raspberry pi is a micro computer which takes the information sent by the wearable to the cloud. It is programmed to check whether the heart beat (60 -80 beats per minute), blood pressure (120/80-140/90) and temperature (97°F (36.1°C) to 99°F (37.2°C)) are in optimal condition. If the parameters deviate from the normal range, the raspberry pi will call the care-taker and covey the patient's health condition. It even notifies the doctor and the bystanders. It shares the location of the patient using GPS sensor in the wearable. The Raspberry pi is programmed with pre-defined first-aid instructions that are read by the wearable in any abnormal situation. Through phone call, it will also respond to the queries asked by the care-taker so that he/she can take appropriate action. The wearable will also convey important messages given by the care-taker to patient. It even reminds the patient to take the medication on time and notifies him/her about their schedule. In case of power failure, the model switches from wifi to network mode and vice-versa. In normal situation, once in a day the average report of patient's health condition is mailed to the doctor and the care-taker. Once the data is sent the cloud will erase the previous data for efficient use of space. In this way, Case Assist will help to maintain good health.

ADVANTAGES

- ➢ Care Assist is feasible and user friendly.
- ➢ It is affordable by a common man.
- ➢ It tracks your information anytime and anywhere to save life in case of emergency.
- ➢ It saves time and recourses as there is no need to wait for the general check-up.
- ➢ It will remind the patient about his medication.
- ➢ It will respond and read out the messages sent by the care-taker.
- ➢ In abnormal situation the wearable intimates primary care of treatment through voice.
- ➢ The model switches to network mode if it is not in wifi range.
- ➢ Efficient storage of the data is maintained.
- ➢ The wearable automatically gets charged using solar panel.

V. CONCLUSION

Care Assist has wide range of usage. The main essential factor is that it monitors the patient condition every second wherever he/she is and alerts care-taker though call in any abnormal situation. It has a constant check on patient's health through IOT.

VI. REFERENCES

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