Healthcare Monitoring Mobile Application using Wearable Sensors

Sachin Patil[1], Kaustubh Gaikwad[2], Vishal Dabare[3], Akash Bondage[4]

Computer Department, Pune University[1, 2, 3, 4]

Abstract: In this project, we are going to implement the healthcare monitoring android mobile application. The basic idea behind the healthcare systems is to monitor the human parameters using some wearable devices (sensors). Existing systems provides the monitoring of data using sensors and that data is send to android mobile application using some wireless communication techniques like (Bluetooth or Wi-Fi). And that data is send to the cloud based storage for further operations. Doctors can download that data from cloud anytime, analyse that data and send suggestions to the user (patient). By using existing system, the drawback is, data can only analyse by the doctor, but sometimes that may take long time for sending results to the patient. Sometimes that may be harmful to user (patient). In this project, this drawback is recovered using some advancement. In this project, the data collected from human body using some devices(sensors) is directly send to the android mobile application through wireless communication (like Bluetooth…). But this data is analysed by system server as well as the doctor. This will help the user (patient) to take some immediate action. System server will analyse that data and send to user (patient) as well as the doctor. This will also reduce the workload of doctor. System server uses some data mining algorithms to analyse the human body parameters. This will help to doctors as well as the user (patient).

Keywords: Bio-sensors, cloud data, mobile API, web application, data mining

I. INTRODUCTION

The tracking health data (pulse, humidity temperature, blood pressure, diabetes) for patients at home or outside of home, having a critical problem because these patients are presence of one or more additional diseases co-occurring with a primary disease. It is known that chronic diseases (some examples of chronic diseases include heart disease, diabetes) have significant negative effects on quality of life of the people. The actions in case of chronic disease are interventions designed to manage and prevent a chronic condition using systematic approach to care and potentially employing multiple treatment modalities. About 50% of general consultations are for chronic diseases, 50% of hospital bed days due to chronic diseases and their complications. For supporting the healthcare and for improvement of patients monitoring it can be used wearable electronic devices for monitoring and smartphones for receive data by wireless transmissions (Bluetooth) from sensors. Wearable devices based on IOT technology and cloud computing has the potential to change the way in how we monitor our personal health, take our medication, communicate with medical staff, and it could effectively assist the elderly living alone.

The capacity of sensing and receive data about non electrical measures is derived by hardware (bio-sensors) that can measure physical quantities, such as the temperature, humidity, vibration or magnetic field. The data received from bio- sensors can be received by Bluetooth(ZigBee).Bluetooth is a mid-range wireless technology that works within a 10-meter range and transfers data at a rate of 2.Mbps, this make Bluetooth a good alternative for ongoing, The temperature and also humidity sensors plays an important role for direct use in health monitoring systems or for make the correlations between values received and diseases. The gathering of data received can be provided by cloud services, The Cloud services like as IaaS (infrastructure as a service), PaaS (platform as a service) or SaaS (Software as a service).

II. RELATED WORKS

II.I Existing System

Existing systems provides the monitoring of data using sensors and that data is send to android mobile application using some wireless communication techniques like (Bluetooth or Wi-Fi). And that data is send to the cloud based storage for further operations. By using existing system, the drawback is, data can only analyse by the doctor, but sometimes that may take long time for sending results to the patient. Sometimes that may be harmful to user (patient). Some of the system does not provide cloud storage for accessing data to doctor. Doctor can access data through the pc on web application. They do not provide mobile application for accessing patient disease details from anywhere to take emergency decisions or treatments. Existing system [Fig. 1] may fail to keep backup of the patient disease details on device in case of network failure the sensor data send to mobile by using the Controller so if Controller fail to send right data to the mobile app and wrong data may send to doctor it is harmful to patient health.
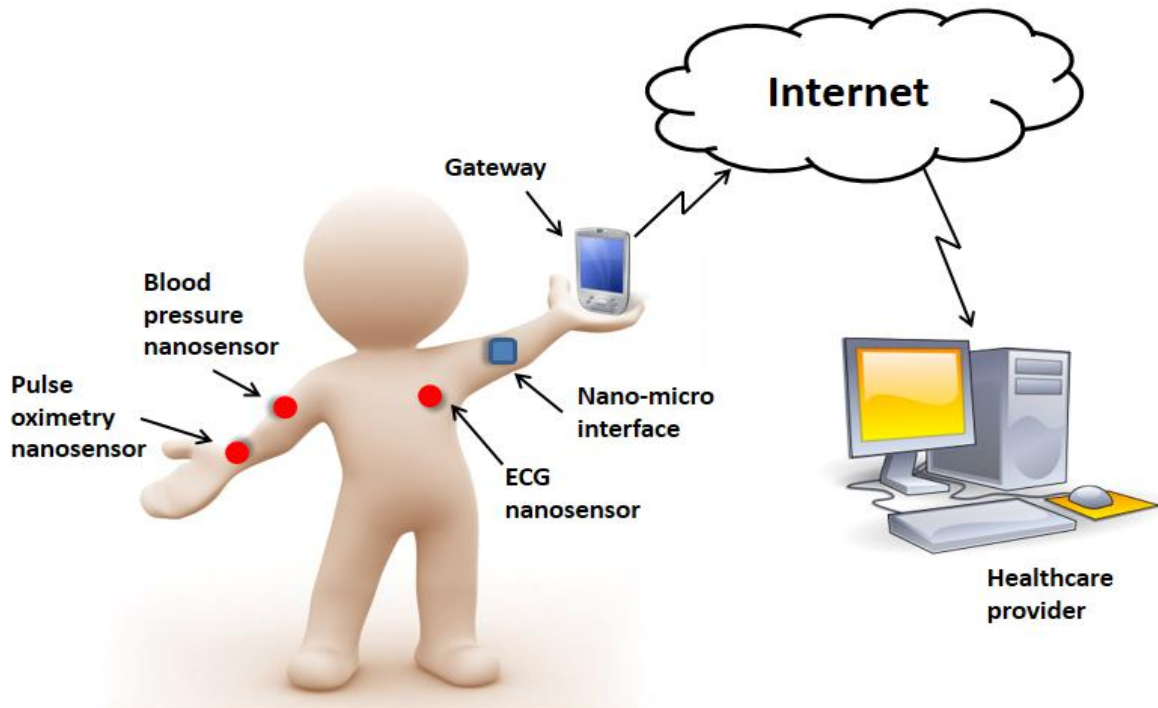
Fig 1. Existing system model

II.II .Taxonomy Chart

TEXONOMY CHART							
survey Papers Features	Author & Publication Date	Web Based	Disease sensed	Cloud Storage	Android Based	Offline notifications	Server Suggestion
Wearable Sensors for Remote Healthcare Monitoring System	Narendra Kumar, 2012	✔	✘	✘	✘	✘	✘
A Hospital Healthcare Monitoring System Using Wireless Sensor Networks	Hamid Reza Nazi, 30 jan 2013	✔	✘	✘	✘	✘	✘
Using Wearable Sensors for Remote Healthcare Monitoring System	Henry O. Nyongesa, 31 march 2011	✔	✔	✔	✘	✘	✘
Mobile Application for Tracking Data from Humidity and Temperature Wearable Sensors	Aileni Raluca Maria, 27 jan 2015	✔	✔	✔	✔	✘	✘
Proposed System		✔	✔	✔	✔	✔	✔

Fig. 2 Taxonomy Chart

III. PROPOSED SYSTEMS

In this project, the data collected from human body using some devices(sensors) is directly send to the android mobile application through wireless communication (like Bluetooth…). But this data is analysed by system server as well as the doctor. This will help the user (patient) to take some immediate action. System server will analyse that data and send to user (patient) as well as the doctor. This will also reduce the workload of doctor. If suddenly network fail on patient or doctor device the system will store the backup on the device on the previously collected data. This data will help to patient to take some emergency action on that time and after network access the new data will updated on device so useful for next emergency cases.

In this system the server is the main part which keep the details of client about their basic information, occupation and disease related information. When the server receive data from patient it will analyse and generate the report and send report to both patient and doctor and keep this information on cloud to access by both.
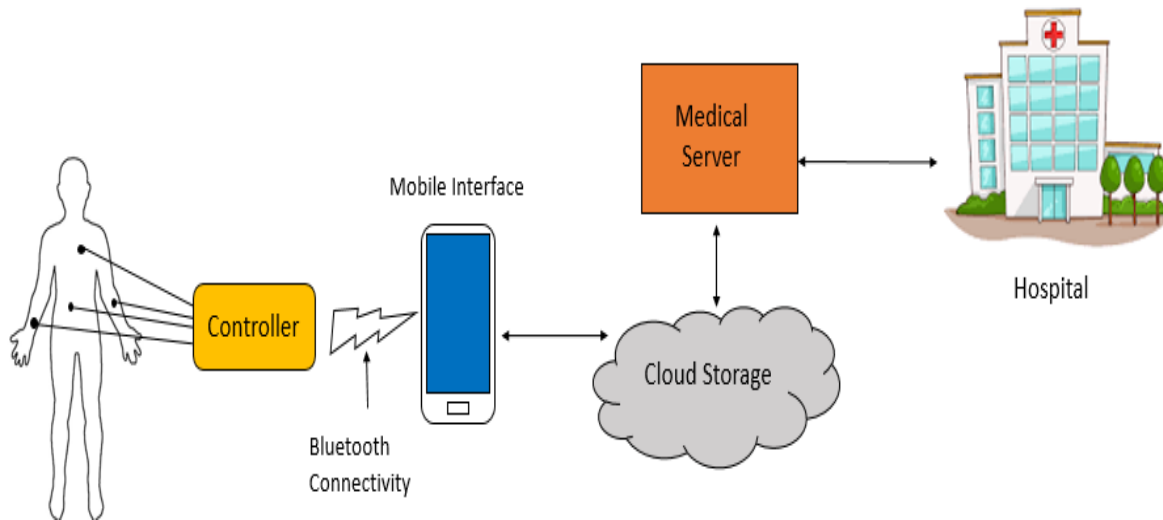
Fig 3. Architecture of Purpose system

III.I. Working of purpose system

In the purpose system patient, can check temperature, Humidity, blood pressure, diabetes by using mobile app and some sensor. Client can have required to register their information on the system server to get login ID and password. By using this login id and password they login in to the mobile app. Patient can attach the sensor to the body. And start the mobile app. than sensors are activated and send data to the mobile app through controller by using Bluetooth connectivity. This data will send to the medical server for further processing.

The medical server will access this data and analyse it by some computation and generate report. Report contains sensor parameter related to disease and some suggestion to take immediate action to patient. This report will send to the patient as well as doctor and this information stored on cloud storage. Doctor will access patient details anywhere by medical server on his application and send his suggestion to the patient this information also store on database. Patient will use this report to take medical action. All this information backup are also store on mobile device in case of network problem.

IV. ADVANTAGES AND LIMITATION

Advantages
1. With the Healthcare monitoring system Doctors can easily monitor the patient with his/her home or outside of the home.
2. The system can be used in rural areas also.
3. Possible to monitor the health in real time.
4. The patient can easily analyzed by the doctor at his home also.

Limitation
1. If Micro controller fails then it leads to catastrophe.
2. bio-sensors are more costly.
3. Complex in setting up the system.

V. CONCLUSION

The advantages of monitoring based on sensors and software for health care are:
● Quick data visualization and big data storage
● Data and services virtualized through cloud computing
The Software application health monitoring can be used also in e-Learning processes by medical students and doctors for analyzed data and make correction for diagnostics based on clinical trial data

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