Impact Factor Value 4.046 e-ISSN: 2456-3463
International Journal of Innovations in Engineering and Science, Vol. 3, No.4 2018
www.ijies.net

Human-Cloud Integration in Next Generation Healthcare Systems for Wearable Devices

Sowmya V, Medha chowdhary M, Megha P G, Pooja shree K
Department of CSE, K.S.I.T, Bengaluru , Karnataka

Abstract *– Wearable devices are playing important roles in health care. With the rapid development of the Internet of Things, cloud computing more comprehensive and powerful applications become available. The advanced cloud technologies and advanced terminal technologies are expected to provide people with more reliable and intelligent service. In the proposed system washable smart clothing, which consists of electrodes and wires is the critical component to collect user physiological data and receive the analysis of user health and emotional status provided by cloud based machine intelligence. Current wearable technology enables user and doctors to produce so for unprecedented amount of information.*

Keywords- Tracker Motion, vital sign measurement, IoT,WSN.

I- INTRODUCTION

The ever growing number of elderly people coupled with limited resource in term of medical facilities and personnel in many countries the burden conventional health care system carries become heavy. it is a great challenge to design a cost-effective healthcare system for handling chronic diseases, especially considering the large population of elderly people and empty nesters, most of whom suffer from one or more chronic diseases the wearable device proposed will be communicating with caretaker via SMS would ensure that there is communication link. We should lower the operating cost and improve their scalability of health care system, which are expected to provide various health care system.

[1] Physiological monitoring, early wearing via abnormal vital science and online patient consultation.

[2] The assistants of Cloud computing various advanced services become possible by the use of analysis of chronic disease detection health monitoring.

[3] It is difficult to following and desirable issues in existing health care system..

By monitoring hand using sensor during exercise, position of hand is checked and updated to cloud. During consultation doctor can easily identify the correctness of exercise within no time. Using the same sensor patient falling can be detected and alert is sent. A graph is generated in Amazon cloud server. This graph can be viewed in the webpage created for the project. Any patient or doctor can read the graph and understand the exercise behavior of the patient. This makes the doctor to communicate with the patient with short time. Patient can easily follow the doctor instruction and
and analyze the graph easily.

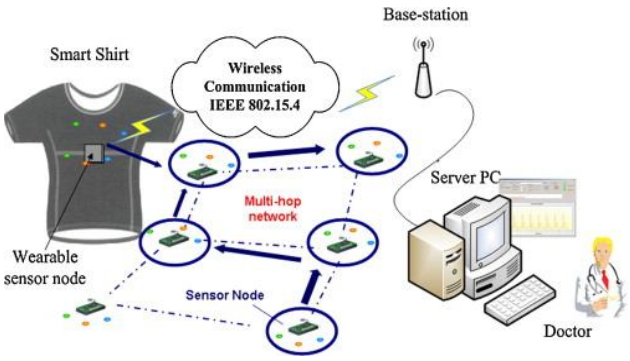

Figure1. Wireless sensor network based wearable smart shirt for activity monitoring.

II WEARABLE DEVICES IN HEALTH MONITORING

In today's world, where time is precious, people, the working class especially, spend most of the day shuttling between various tasks and tend to ignore their health and fitness [6]. Even a simple appointment with a doctor in a clinic can require several tests set for diagnosis,

prescription, and finally treatment, which can take a lot of time. Therefore, many patients only go to a clinic when they are suffering from a serious illness.

1. Motion Trackers

The measurement of human movement (motion tracking) has several useful applications in sports, medical, and other branches of studies. Such applications include fall risk assessment, quantifying sports exercise, studying people habits, and monitoring the elderly. Wearable trackers are becoming increasingly popular for two main reasons. They can motivate the user during the daily workout to perform more exercise, while providing activity measurement information through a smart phone without manual calculation .

2. Vital Signs Measurement

Many wearable devices have been implemented to measure critical elements in healthcare monitoring. The majority of these devices are in one lead such as electrocardiogram (ECG) and electroencephalogram (EEG) measurement, skin temperature, etc. There have been recent efforts in wearable devices to provide multi-task vital signs measurement. Here, we present the most creative and recent papers in this area.

III CHALLENGES AND BOTTLENECKS FOR MEDICAL IOT

Leading wearable devices based on IoT platforms must provide simple, powerful application access to IoT devices. Many platforms and structures have been proposed by the scientific community, and commercial devices are already available for bio-metric/medical parameter measurement. However, there are serious challenges in this way. The following are four key capabilities that leading platforms must enable.

- Simple and secure connectivity: A good IoT levels of data collection, data transmission permanent storage and observation in a medical station. These step must be secured. Therefore data encryption it is necessary

- Power consumption: To provide the wearer with easy device management and long-term monitoring without interruption, power loss is becoming more important. This is strictly correlated to the number of parameters that are observed, efficient code programming, as well as good data packing, encryption, and compression.

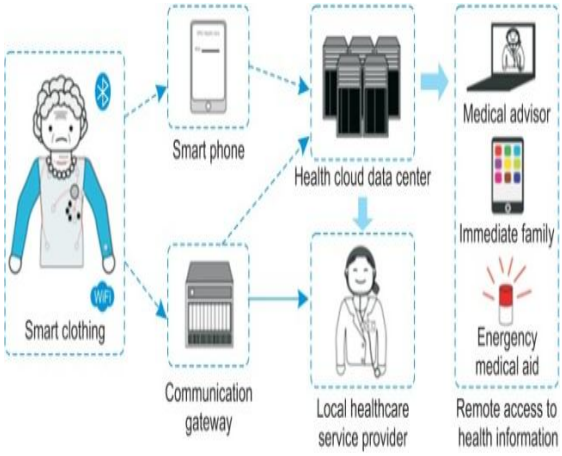

Figure 2 Internet of things for health care monitoring

- Wearability: Wearable devices have been designed for various types of bio-medical monitoring to assisting users in living long, healthy lives. This point is more significant when these devices are intended to be worn by elderly users. Therefore, such devices must be easy to wear, easy to carry, and comfortable. These requirements are fulfilled with a light, small, and well-structured device. A wearable device is expected to be small and light weight, and should be able to be used for a long time.

- Reduced risk in data loss: When data is collected by a microcontroller and transmitted to Smartphone or cloud storage, there is a possibility of disconnection and consequently data loss. This must be reduced as much as possible to provide safe health monitoring. It may be possible through temporary data saving (buffering) in the microcontroller providing a large memory.

IV LITERATURE SURVEY

The body temperature also changes from one person to another and varies throughout the day. The body temperature is found to be lowest in the early morning while it is highest during the early evening. It is necessary to monitor the changes regularly. An average human adult has normal body temperature of around 37oC or 98.6o F. However, it is difficult to define an accurate value of body temperature as it varies according to daytime, age and physical state of a person. So, the normal body temperature of a healthy person can be 36.1oC (97o F) in the early morning and can rise up to 37.2oC (99o F). Hence, normal range of body temperature of a healthy adult varies between 97o F and 100o F or 36.1oC and 37.8oC . The temperature sensor

used here is LM35. This temperature sensor generates an analog output voltage that is proportional to the temperature. So, this temperature sensor requires an analog to digital converter to convert the analog output voltage to a digital form.

device	Feature	Communication mode
Fitbit flex	Step counting and quality of steps, small size,wrist worn	Wireless-connection to mobile application only
Withings pulse	Step counting, distance travelling recording sleep time measuring heart rate	Wi-fi enabled
Withings pulse	Sleep tracker monitoring and hours of light as well as deep sleep	Compatible with android as well as the iphone

V RELATED WORK

In this study we propose the use of hash functions to store errors in wireless sensor embedded device This is an effort to address the issue of fixed memory storage. A hash robust audio hashing to identify audiconteand image hashing for image sysauthentication They may be distribution-dependent , distribution- independent , cluster ,multiplicative multiplicative or index function-based In past studies, hash functions have been used to perform several tasks. Cryptographic hash function use ranges from constructing message authentications to implementing key derivations in medical applications, hashing algorithms have been used to process k-mers in DNA sequencing as well as produce unique identifications of patients while maintaining their privacy of hash functions include robust audio hashing to identify audio content and image hashing for image authentication

IV FUTURE SCOPE

To make this project as user friendly and durable, we need to make it compact and cost effective. Going further, most of the units can be embedded along with the controller on a single board with change in technology, thereby reducing the size of the system. Pre-alert about hazardous environmental conditions. This unit can be used by different patients, based on their diseases. Wearable jacket can be used by soldiers. This product will be more helpful for travelling people. will be made in light of the estimation or perception accumulated from the sensor. Those computerized information were investigated all the more proficiently (show, upgrade and control) utilizing a PC.

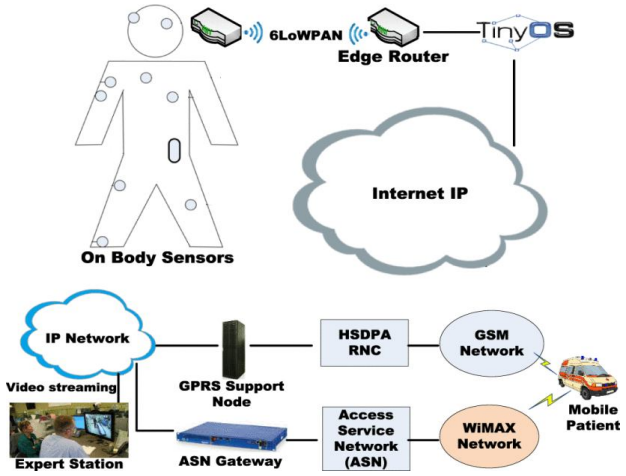

Figure 3. Internet of things for health care

V CONCLUSION

In this article, we comprehensively investigate the disadvantages of the existing healthcare system and the trend of wearable computing. As health care services are important part of our society, automating these services lessen the burden on humans and eases the measuring process. Also the transparency of this system helps patients to trust it. When threshold value is reached, the alarm system that consists of buzzer and LED alerts the doctors and he can act more quickly. These devices not only detect stress, but they also incorporate stress-management techniques like focused breathing and meditation exercises to relieve the user's stress levels. The objective of developing monitoring systems is to reduce health care costs by reducing physician office visits, hospitalizations, and diagnostic testing procedure. The GSM technology helps the server to update the patient data on website. Many further improvements can be made in our system to make it better and easily adaptable such as adding more advanced sensors. The biometric information of the patient which is stored and published online can be given to scientists and researchers of medical fields to analyze the value and find patterns or for other research work. To simplify the hardware and reduce wiring we can have used wireless sensors.

VI AFFIRMATION

The creators enormously express gratitude toward Dr.Dayananda R B, Professor, computer science and engineering, K.S institute of technology, Bangalore for her full help reached out to do this extend.

REFERENCE

[1] *M. S. Hossain and G. Muhammad, "Cloud-Assisted Industrial Internet of Things (IIoT)–Enabled Framework for Health Monitoring,"* .

[2] *S.-H. Seo, J.-W. Jang, and S.-W. Jang, "Design and Implementation of a Smart Clothing System Coping with Emergency Status,"* .

[3] *K. Zheng et al., "Big Data-Driven Optimization for Mobile Networks Toward 5G," IEEE Network*.

[4] *M. Chen et al., "Smart Clothing: Connecting Human with Clouds and Big Data For Sustainable Health Monitoring," and Applications*.

[5] *L. Hu et al., "Software Defined Healthcare Networks," IEEE Wireless Communication.*

[6] *E. Strazdiené et al., "New Tendencies of Wearable Electronics Application in Smart Clothing," Elektronikair Elektrotech - nika.*

[7] *R. Grover Brown, P. Hwang, "Introduction to Random Signals and Applied Kalman Filtering".*

[8] *K. Ventkatarama, "Probability and Random Processes".*