Intergration for Mearsuring Blood Pressure and Body Temperature Sensors using Mobile Application

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***Abstract* −Wireless Sensor Network technologies have become a latest research area in health care industries due to rapid maturity in improving the quality of life of a patient. Wireless Sensor Networks when work in medical field provide continuous monitoring of vital health parameters which over a long period of time provide doctors much needed help to make accurate diagnosis and giving better treatment. In this paper we propose a model which monitors various health parameters like body temperature and blood pressure monitor (mm Hg) of an individual. The collected data through the system is then transferred over the internet to a smartphone application of the patient. In this project, we are going to build a temperature and pressure measuring system. In this project, we will use a pressure sensor model BMP180 to detect temperature and pressure, Arduino device and show in mobile application temperature and pressure. The pressure sensor BMP180 consists of a piezo-resistive sensor, an analog and digital converter, control unit with E2PROM and a serial I2C interface. It delivers the contributed values of temperature and pressure. To sense the temperature sensor we use LM35 Temperature sensor. LM35 is an integrated analog temperature sensor whose electrical output is proportional to Degree Centigrade. LM35 Sensor does not require any external calibration or trimming to provide typical accuracies. The microcontroller of the sensor device sends the start sequence to measure temperature and pressure. The temperature and pressure can be read over and show it in the mobile application.**

Index trem- Biomedical monitoring, communication networks, health and safety, patient monitoring, sensors

I. INTRODUCTION

A. Importance of Recommendation

Wireless sensor network (WSN) is a network comprised of autonomous sensor devices which are deployed in known locations for the purpose of monitoring and collecting data such as sound, radio signals, temperature, pressure etc. WSNs can be used in many industrial and civilian applications, including industrial process monitoring and control, healthcare applications, habitat monitoring, home automation and many others.

Nowadays, health care systems are highly complex. People in need for continuous health care are increasing day by day. Medical staff faces with more and more challenges. This raises serious questions in the domain of medical which must be answered in the best possible ways. Problem solving must include detailed analyses of the current state so as to form functional system which resolves the satisfying number of issues which are to be faced in future. In medical WSNs can offer this kind of solution

we have witnessed the emergence of Wireless Sensor Networks. WSNs are distributed autonomous sensors to monitor physical or environmental conditions such as temperature, pressure, sound etc. Intelligent Medical Sensor System models are always built using Wireless Sensor Networks. The primary aim of our system is to gather the information of individual health parameters based on WSN and to provide physicians with a clear data and readings which can be used monitor the diagnosis of health parameters through mobile communication. This can be utilized for individual investigation to help with rolling out conduct improvements, and to share with parental figures for early detection and treatment. In the meantime such systems are successful and monetary methods for observing ailments.

Wireless sensor network (WSN) is a network comprised of autonomous sensor devices which are usually deployed in known locations for the purpose of monitoring and collecting data such as radio signals, sound, temperature, etc. Becoming mature enough to be used for improving the quality of life, wireless sensor network technologies are considered as one of the key research areas in computer science and healthcare application industries. The pervasive healthcare systems provide rich contextual information and alerting mechanisms against odd conditions with continuous monitoring. This minimizes the need for caregivers and helps the chronically ill and e

lderly to survive an independent life. Currently, wireless sensor networks deployment is starting to be deployed at an accelerated pace. It is reasonable to expect that the world will benefit from services of Wireless sensor networks with technological access.

I. LITERATURE REVIEW

We will be afforded an opportunity to study incentivized adoption of technology coupled with the threat of future penalties for non-adoption. This research uses institutional

theory to propose factors that are expected to influence the adoption of electronic health records (EHRs) by independent physician practices in the coming years. The study presents a model describing the role of coercive, mimetic, and normative forces on adoption intent. Payer incentives/penalties as well as dominant healthcare delivery partners will exert coercive pressures on physician practices. Additionally, since physicians identify with their own specialties, it is expected that they will also be subject to mimetic forces resulting from successful adoption by similar specialists, particularly given their concerns about expected benefits from these systems. Finally, normative forces resulting from the successful interoperation of electronic health records among regional providers should influence physician adoption. The ability to partner with other physicians and healthcare providers or vendors adopting the same system should increase individual practice adoption intent in the presence of coercive, mimetic, and/or normative forces.

Due to an ageing population and a shortage of hospital beds, it has become a challenge to find new ways to support and care for people with chronic illness living at home. Living with chronic illness changes the lives of those affected, who are often in need of support and nursing care in their homes [1–3]. eHealth has the potential to become a means of providing good care at home [4], which is especially challenging with regard to this emerging field [5]. eHealth refers to information and communication technology (ICT) tools and services for health, whether the tools are used behind the scenes by healthcare professionals or directly by patients and their relatives [6]. ICT tools can be used to access a wide variety of technological solutions for communication, including text messaging, gathering and monitoring data, diagnosis and treatment at distances, and retrieving electronic health records [5, 7]. According to the World Health Organization (WHO) [8], eHealth is used in the healthcare for transmission of digital data, including data stored and retrieved electronically to support healthcare, both at the local site and at a distance.

Wireless Sensor Networks are infrastructures containing sensing, computing and communication elements that aim to give its controllers the ability to measure, collect and react to occurrences in the monitored environment. They can be seen as interfaces between the virtual and the physical worlds. Because of their widespread applications, they are one of the most rapidly developing information technologies over the last few years. This report is designed to give an overview on the field of Wireless Sensor Networks and therefore focuses on outlining the general ideas behind WSNs, the technology that is used to implement these ideas, the different strategies of routing in these wireless networks and the strong and weak points of the technology.

A wireless Sensor Network system is having potential to monitor the Human Health, Structural health monitoring for building, bridges. In this paper a survey on Human health monitoring & Structural health monitoring is shown by using wireless sensors network. Different applications by wireless sensors for healthcare system is discussed. Technical challenges regarding health care system is explained. Application of ubiquitous for structural monitoring also explained. The advantages & applications of wireless Sensor Network system also discussed. This paper is purely a survey of earlier work of different Authors.

II. RELATED WORK

Existing System has the problems of using single functionality specific machines to monitor various health parameters of the user. These machines are huge and bulky in size as well as it is also not able to communicate the sensed or captured data to other devices using mobile communication.

Not able to retrieve the data

Possible to take test in the lab or hospital only, so people should go to hospital and examine the result, it takes much time

More expensive.

Not possible to get result quickly.

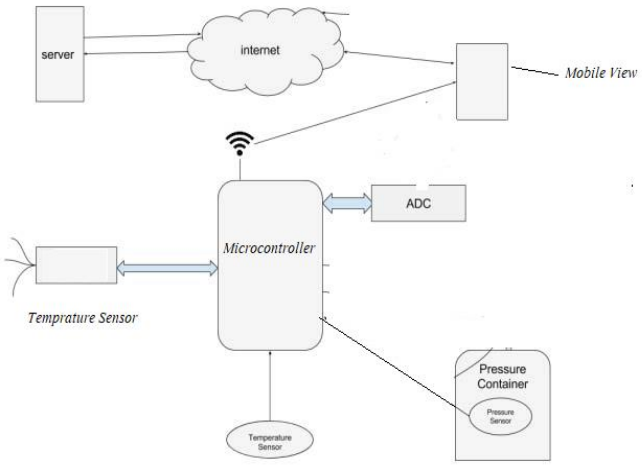

Fig. 1. Proposed system working architecture

III. METHODOLOGY

A. Temperature sensing unit*:*

Integrates LM35 Temperature sensor. Digital Infrared Temperature sensor and other required components on Pi 3. This sensor has high reliability and long-term stability. The system accepts data from MLX90615 sensor through Pi 3 and gives it to user's smartphone application for diagnosis. The average normal body temperature is 98.6°F (37°C). The range defined in our system for the body temperature to be normal is from 97°F (36.1°C) to 99°F (37.2°C). The temperature over 100.4°F (38°C) is the quoted abnormal human body temperature for the system; it means the user is suffering from fever caused by infection or illness.

B.Pressure sensing unit:

In the given proposed system, we are measuring Blood Pressure of the user using The BMP180 Breakout barometric pressure sensor with an I2C ("Wire") interface. This Pressure sensing unit consists of various other components which are responsible to calculate the systolic (maximum) and diastolic (minimum) blood pressure of the user. This unit comprises of one pressure container which

contains pressure sensor which is used to monitor pressure in our system. Second component is Air pump which is used to fill the handcuff; it is an inflatable strip tied around the hand of the patient for whom we want to calculate blood pressure, when wrapped around hand and inflated it will stop the blood flow in hand.

C.Server storage:

The server is used to store both temperature & pressure data in to the database. Through this server only the data can show to the mobile or web interface.

GUI Display:The Web or Mobile interface is use to display the data which is sensing by the pressure & temperature server.

IV. RESULT AND DISCUSSION

The accurate recommendations of locations were done through NLP and efficient classification process (SVM). The secure and accurate prediction of highly recommended location through user feedback is shown below.

The computation time of our proposed work and existing method is shown below as graph. It shows our proposed method consumes minimum computation time and it increases performance of our system.

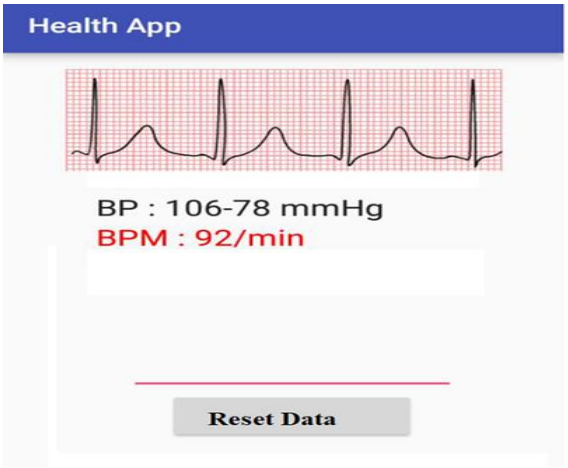

Fig 2: screen shot.

V. CONCLUSION

The calculation of medical health parameters using Wireless Sensor Networks is not a new idea, but rather this application concentrates on calculating two parameters like Blood Pressure Monitoring and temperature altogether in a single calibrated kit which poses to the user as a single system when interfaced with android smart phone application providing higher usability both to doctors as well as patients. With the right information at the right time, the sensor based medical system can help medical patient to easily track and monitor their health record. The system will curb the menace of visiting doctor every time for diagnosis and will help registered patients of the doctors to gain treatment effectively.

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