IOT And Wireless Sensor Based Healthcare Monitoring System For Victim Persons

V.Karthikeyan
Department of ECE
Kalasalingam Institute of Technology,
Affiliated to Anna University
Krishnankoil,Tamilnadu,India
velkarthi85@gmail.com

S.Thayammal
Department of ECE
Kalasalingam Institute of Technology,
Affiliated to Anna University
Krishnankoil,Tamilnadu,India
thaya.psr@gmail.com

E.Raja
Department of ECE
Kalasalingam Institute of Technology,
Affiliated to Anna University
Krishnankoil,Tamilnadu,India
Rajae.susi@gmail.com

Abstract— **The urbanization and communal modifications causing a steady raise of the inhabitants in circumstances of dependence. The major anxiety of the senior people is their healthiness along with its penalties of hope is the major source of bearing and their not well physical condition. Since old aged citizens are full of dissimilar health issues, it requires a profound alteration in everyone's physical condition strategy to obtain modification to senior populace. In health monitoring system, it is significant to congregate health information of the patient. But, it is often weak in developing countries. During emergency it takes a long travel for consulting a particular specialist and this may cause many deaths. There is more communication gap between the patient and specialist. For taking scan, need to take the patient to hospital. In this method, wireless sensor technology and IoT capacitated health care observing system for victim persons are used to transfer information between the general physician and specialist doctor. This proposed method is used to minimize the travelling distance and thus avoid sudden death with low expensive.**

Keywords—IoT, Pressure Sensor, ECG Sensor, Temperature Sensor, Medical helathcare

I. INTRODUCTION

The UN organization proclaims the set of goals, to attain the sustainable improvement in the world. The essential goal is the good health and well being. The WHO surveys the main killer diseases in the globe amongst together men and women. The heart diseases, stroke, chronic respiratory diseases, cancer and diabetes are the majority cause of death of men and women in the globe. Majority of the aged people these days' feels a loneness and psychosomatic hopelessness, either as a consequence of staying single/ neglect ion or because of minimized relationship with their family and relatives [1]. The health monitoring scheme with modern technology (IoT) is the essential measurement to reach the goal of the UN. When congregate with an independent BSN network, the engineering knowledge turn into dominant devices in health supervising, medical diagnostics along with individual connectivity. The talented outlook appearance of Internet called "Internet of Things" that connects everything and everybody. The IoT embeds astuteness in the sensor devices to separately communicate, exchange information and formulate smart decisions [10]. Basically IoT performs human-human communication to human-device and device-device.

The proposed method is used to reduce causality and sudden death and it is wireless sensor technology and IoT capacitated healthcare observing system for victim persons. In rural areas if the patient is suffered by chest pain, then they consult for the general physician in the nearest place. They could not able to consult for the particular specialist doctor. Then the general physician monitors the patient and report to the end specialist doctor. The specialist doctor diagnoses the problem for the patient. The communication between the general physician and specialist doctor are done by video conference, webcam, etc.

Sensors and actuators play the essential position in IoT mission. These sensors are embedded through information and communiqué apparatus. IoT sensors are able to accumulate their environment, interlinked collectively, capable to utilize Internet services and cooperate along with each other and with humans. Promising IoT technology combined with customer encoding provide the chance to inter connect the products with respect to the client specific needs. Internet of things provides the prospect to interconnect the end user yields with wireless connectivity.

Fig1. Internet of Things

In this Healthcare observing system uses personal computers and IoT technologies to provide medical information and services from remote locations. This arrangement can be prepared in an ordinary clinic at any rural areas and the complication of diseases can be diagnose and treated by a doctor who is specialized about that disease from anywhere in the world[14]. IoT is a policy leading the professionals, doctors and Victims mutually through a continuous interchange of physical database and specialty advice needed among the collection used for a moment in addition to improved Medical concern. All the medical sensing devices are interconnected with the physician's computer and transfer sensed records via IoT to acquire specialist opinion. This communication is very helpful for the specialist doctor to diagnose the victim persons who even in the rural area. Overall the main purpose of this system is reducing the sudden death.

II. LITERATURE SURVEY

The IoT assembles intelligent devices the vital establishment of structures in the improvement of system controlled clever wide spread architecture [2]. The IoT have different kinds of execution areas, together with monitoring of health. Riazulislam.et.all discussed the advancement in IoT-situated medical concern technologies and evaluated the state-of-the-art system framework/policies, solicitations, and engineering learning's in IoT- deployed medical concern solutions. Manoj Kumar discusses the structural design of the medical care scheme and analyses the safety concerns plus confidentiality problems when measuring victim's biological information from sensors to portable system and storing this information to the server. In this work the opposite to wire transmission is confirmed using RFID methodology that

sleeves merely small region. A scheduling technique is proposed by Sourav Kumar Dhar.et all for the IoT based system, which cancel out intervention between diverse sensors and consequential distortion of valued victim's biological information. Wu.X.Det.all proposed an innovative building block for a Pervasive Medical Information Management and Services System (PMIMSS) through societal computing, and disputes their primary methods, which embrace health care data, apportion and incorporation, health awareness innovation and resources, medicinal examine excellence assessment, modified health checkup suggestions, and truthful implementation for people-system communication [6]. Abinaya.et.all targeted on a medical care statistics scheme established on ontology scheme. In specific, protection and seclusion provocations are scanned in the Ontology-deployed
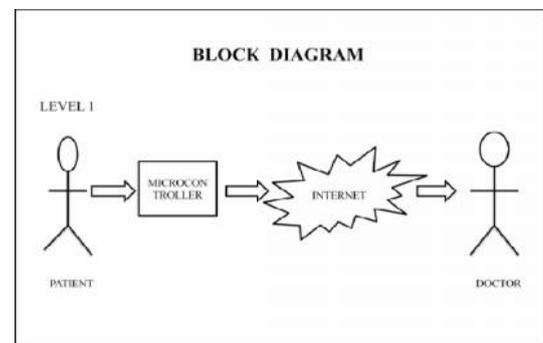
medical care structure.

III. PROPOSED METHODOLOGY
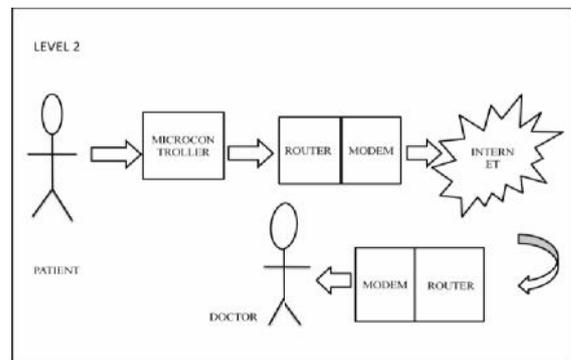
Fig2. Patient Information Measurement

Fig3. Information Sharing between general physician and specialist doctor

The safety and solitude safeguard of perceptive and personal patient health statistics is a key uncertain anxiety and a shatter keen on the organism is feasible [3]. Various sensors are attached to the victim. Sensors are Temperature, Systolic,

Diastolic, SOS, Oxygen flow rate. Result of the sensors is displayed in the monitor by using IOT based health observing system. Wireless connection is used to connect the rural area doctor (General physician) and remote end doctor (Cardiologist) for the purpose to check the patient. Then the specialist doctor observes the patient by using the monitor which is the patient report. The specialist doctor will diagnose the patient and prescript using video conference to the other end general physician. The projected methodology architecture used for IoT medical care is exhibited in the Figure.3. The architecture composed of ATmega328P Atmel processor, heat sensor (DS18B20), PS-2207 Blood Pressure Sensor, Liquid Crystal Display (LCD) (16x2), GSM MODEM, Wi-Fi section, serial Max232, and synchronized Power Supply. In this arrangement PIC18F46K22 Microcontroller gathers the information from the sensors and transmits the information via global system for mobile communication. The above figure represents the initial measurement set up of the general physician doctor about the patient information like ECG, Pressure and Temperature etc. Fig3 represents the patient information sharing system between general physician and specialist doctor. Once the information about the patient is received from the general physician, the specialist will go through the data's of the patient and suggest the treatment methodology for the patient to general physician. Fig4 represents the overall online information sharing and treatment between the doctors and the patient. When foregathered into a self-governing body sensor group, the methodologies turn into dominant tools in medical-care examining, health care characteristics, and private connectivity [8].
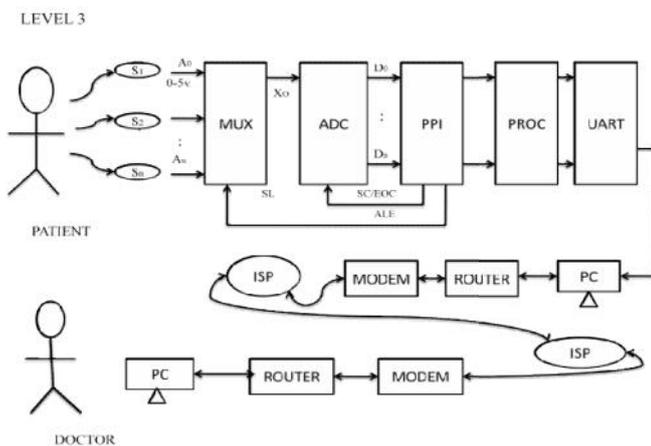

Fig4 Sending the Patient Information to remote Specialist
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IV. IMPLEMENTATION METHODOLOGY

HARDWARE DESCRIPTION

a) ATmega Microcontroller

The Uno ATmega328P is a microcontroller board used in this proposed methodology. It contains fourteen digital I/O pins (of which six can be used as PWM outputs), six analog inputs, a sixteen MHz quartz crystal, a USB link, a power jack, an ICSP header and a reset key. It includes the whole thing desired to carry the ATmega328P controller; merely an AC -to DC adapter or battery starter along with the USB cable is used to attach the microcontroller in the projected system.

b) Blood Pressure Sensor

Proposed oscillo metric based technique in order to compute the systolic as well as diastolic blood pressure of victim person. PS-2207 Blood Pressure Sensor is used in the projected organism. It is the major customary scheme used for independent blood pressure computation. This technique is not invading adjacent cells and uncomplicated to computerize compare with the conventional auscultation scheme, which usually needs a suspiciously qualified physician to provide perfect outputs.

c) Heart Beat Sensor

Pulse oximetry (PO) is acceptable methodology intended to the non invasive continuous recording of oxygen in blood dispersion. Incorporation of internet of things by PO is applicable in favor of IoT - piloted health care implementations. A review of machinery-piloted improvement of medical care facilities analyses the prospective of IoT-piloted pulse oximetry [9]. A general pulse oximeter uses an automated microprocessor in addition to a duo LEDs covers the photodiode by means of a transparent portion of the victim's anatomy, generally a fingertip or an earlobe. This apparatus arrives through interconnection via Bluetooth health scheme, besides the sensor links straight to the modern. In the proposed scheme internet of things capacitated low price PO is utilized for the victim's heart beat examining.

d) Body Temperature Monitor

Patient fever measuring is the important portion of health care system as human physical body heat is a significant crucial symptom in the conservation of homeostasis. In the wireless-IoT method this thing is validated by means of sensor which is implanted in Telos B and the obtained heat variants indicates the effective working of the wireless- IoT method [13]. A temperature computation scheme is a residential opening above the Internet of Things. The residence access sends the patient's physical body heat through the usage of infrared recognition [4]. The major structure modules in charge for

victim's body heat measurement also transference are the Radio Frequency Infrared sector.

e) MAX232

Max232 is a combination of transmitter/detector which converts TTL level to RS232 level. These detectors usually have the maximum limit of 1.3v and are able to accept +/- 30v of supply. When Max-232 IC detects the TTL level it transforms it in to voltage levels i.e. logic 0 alters in to levels between +3 and +15v and logic1 alters in to levels between -3 and -15v.

f) Wi-Fi Module (ESP8266)

Wi-Fi module provides a free standup Wi-Fi networking by TCP/IP protocol which can provide Wi-Fi linking to every microcontroller. When ESP8266 connected on-board, it has memory and intelligent learning competencies therefore it can be simply coupled to the sensors based on the requirements.

SOFTWARE DEPICTION

A) Programming with Embedded C

Advancements in the embedded C program is used to write the code for the processor, which was advanced to C headed to handle the general concerns linking C advancements in support of disparate microcontroller based processors.

B) MPLAB Integrated Development Environment version 8.

It is a module spurts on the individual system for implanted controller pattern. It is utilized to interlink the program with the individual modules of the general system.

C) VISUALBASIC

VB is an integrated programming methodology used to create the graphical interface both in the general physician end and in the specialist end. Victim's health care data base is virtually created in a system by the usage of this VB.

D) HTC Compiler

HTC Compiler offers compressed program along with first-rate implementation on PIC embedded controllers by executing the complete code compilation technique. This HTC incorporates the IDE atmosphere and also runs the code effectively in a real time implementation of the proposed health care scheme.

V. RESULTS & DISCUSSION

In this projected health observation scheme, measured biological health information's of the victims are uses communal channel to reach the central processing unit. The length or size and the sampling rate requirement of every sensing apparatus are varying with respect to the environment as well as the victim's health conditions. The above mentioned parameters are the serious issue in order for the real time

implementation of the medical care system. These 2 constraints be supposed to take concern toward attain a consistent and truthful outcome [11]. The sampling rate is maintained adaptively with respect to various emergency situations as well as in the regular conditions and arrive at the central processing unit without any disrupt. The information collected from the various sensors are accumulated by the processor and given to the general physician system. IoT environment is used to interconnect the specialist doctor and general physician in order to provide speedy treatment.
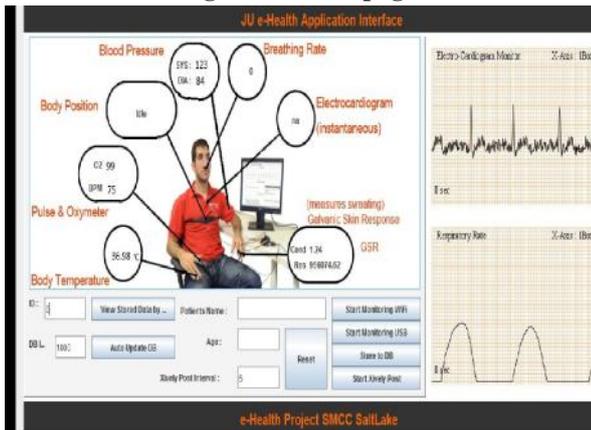

Fig 5.Proposed system

Fig. 6. Health monitoring sensors

Fig.7. Html webpage

Fig. 8. Application Interface

CONCLUSION

By means of the extensive usage of IoT, this effort is intended to focus the internet knowledge to initiate a organism which transmits the health data's via IoT for best health supervising scheme. The sensors are placed on the body of the victim and the measured data signals are given to the microcontroller for processing and then sent to the local computer and further attached to the remote computer through internet. The general physicians can observe the patient report and measured information by enter in to the webpage using individual IP and webpage refreshing selection is given so constantly data reception achieved. Hence uninterrupted patient observation system is designed. The doctor at the remote end now receives the data and they can diagnose the patient at the rural end. Now, even the rural area patients can get a high quality medication from the specialist who is in which every part of the world. In addition with this proposed system cloud data's and additional wireless sensors can be added in order to instruct the general physician to handle the emergency situations.

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