HEALTHCARE SYSTEM FOR EMERGENCY USING IOT

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Abstract— *India is one of the most populous countries of the world. Due to over population, ignorance of health have been remained the major problems in India. For every one minute a death swoops in because of heart attack. Ambulance service plays a vital role in saving lives. Its primary purpose is to give first aid to the sick or injured people in the emergency scene. To save a life is auspicious as well as precious. The idea here is to provide an intelligent smart health system using some sensors and microcontrollers; it will sense the body condition and send the data to the collaborated hospital's database. This proposed idea gives us the development of a wireless based system for pulse rate, blood pressure and temperature monitoring to be used in ambulance. By this, the real time information can be passed to nearby hospitals to alert them about the critical conditions over IOT. This hardware device is fixed inside the ambulance to sense the patient's health, collect the data in a wireless device called node MCU and immediately pass the database to the hospital's server by the concept of IOT. This may intimate the hospital officials and may respond to the necessary actions to be taken to the person in emergency.*

Keywords—Health,Monitoring,Conditions,Ambulance, Emergency

I. INTRODUCTION

In ambulance the care taker have no idea to treat the patient in severe stage, it leads patient to death or Critical stage. This paper proposes a solution to make such services easily available to those in need. It is more reliable than traditional hard-wired system because the system can automatically reconfigure its communication
pattern when a router fails. The proposed wireless system adapts its operation to changing conditions, which is easily expandable and modular. In this way, it improves the quality simultaneously through constant attention and lowers the cost of care by eliminating the need for a caregiver to actively engage in data collection and analysis. The Internet of Things enabled technology is evolving health care from conventional hub based system to more personalized health care system (PHS). PHS will enable faster and safer preventive care, lower overall cost, improved patient-centred practice and enhanced sustainability. A wireless communication domain and maintains patient well-being condition is proposed here. It is designed to build gainful healthcare systems , with poor medical infrastructure and less skilled medical practitioners. A wireless physiological data monitoring system uses communication link to transmit real time vital sign from wearable biomedical sensor gadgets to central network coordinator. The wireless gadgets deployed by patient collect physiological health signs and transmit the data to doctors in real time. It helps it users to stay at home for minor issue thereby reducing frequent hospitalization routine, and visit only when major health problem occurs reducing medication cost. This helps doctors attend to fewer patients with greater care daily and further diminish overcrowding the number of patients in hospitals. For natural disaster, these systems transmit accident remotely to wellbeing experts for emergency response system thereby saving people's lives. Any kind of Physiological/biological sensors continuously check patient's fundamental signs and\or ecological factors. They are gifted in gathering, processing, aggregating, storing and conveying the data to central networking coordinator for additional calculation. Hence, this can be used for diagnosis of disease and for developing serious health-complication alert systems. The intent of this work is to present the state-of-the-art of various aspects of wireless body area sensor network, its communication architectures, wireless body area sensor network applications, programming frameworks, security issues, and energy-efficient routing protocols. We have tried to cover the latest advancements with some discussion on the available radio technologies for this type of network.

II. EXISTING SYSTEM

Ambulance drivers are at increased risk of road accidents due to high driving speeds under emergency conditions. Inside an ambulance basic but important items such as blood pressure gauges, stethoscopes, thermometers, medical tapes, flashlights and blankets, to ensure the paramedics are prepared for almost any situation. But in sever condition we need doctor's advice. When emergency vehicles are stuck in heavy traffic and cars are unable to pull over. In that time, the patients gets into dangerous stage. In ambulance the care taker have no idea treat the patient in severe stage it makes patient die or dangerous stage.

III. PROPOSED SYSTEM

(i) METHODOLOGY

a) Data collection from patient's by using sensor

Sensor is a devices to measure temperature, pulse, heart beat readings through electrical signals. Temperature is the most common physical measurement type in industrial applications. Pulse sensors use the photoelectric method. The heart rate sensor measures your heart rate in Beats per Minute using an optical LED light source and an LED light sensor. The sensor will get the information of patient's temperature, pulse, heartbeat and transmit it into microcontroller.

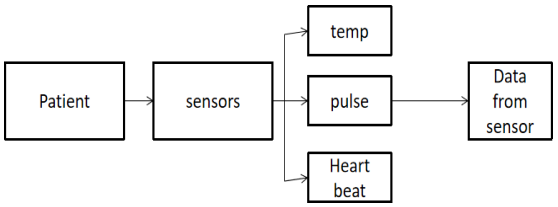

Fig 1: Data collection

b) Transmit data from ardunio to IOT board by use of UART protocol

Microcontrollers can take inputs from the device they controlling and retain control by sending the device signals to different parts of the device. Microcontroller will transmit data from arduino to IOT board by using UART protocol. It provides transmit data and a receive data and then send it to the server. And it will be stored in server and display that information to the doctor.

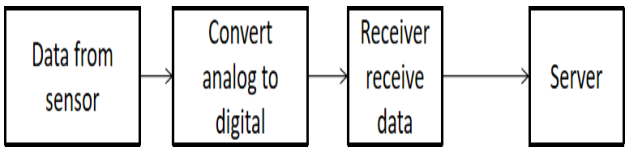

Fig 2: Transmitting data

c) Transmit data from IOT board to server by use of MQQT protocol

IOT board will transmit the data to server by use of MQQT protocol. MQTT (Message Queuing Telemetry Transport) protocol is protocol specifically designed for "machine to machine" communication.

IoT prototyping kits and development boards combine microcontrollers and processors. there are only four main signals which are used directly by the client,namely PUBLISH, SUBSCRIBE, UNSUBSCRIBE, CONNECT.

Other signals are part of the publish/subscribe mechanism. MQ Telemetry Transport is an extremely simple and lightweight messaging protocol (subscribe and publish) designed for limited devices and networks with high latency, low bandwidth or unreliable networks. By using the data received from controller the doctor can suggest the treatment to the patient. As it reduces the human effort then it definitely saves out time.

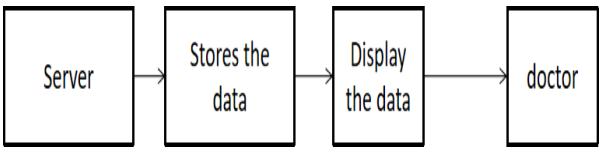

Fig 3: Transmitting through MQQT protocol

(ii) ARCHITECTURE

Developments in wireless sensors, communication and information network technologies have created a new era of the Internet of things (IoT). Our proposed system is to design a device in which the heart beat sensor will sense the heart beat and temperature sensor will sense the body temperature and pulse sensor will sense pulse rate. After sensing, sensors will send respective data to the microcontroller. After that microcontroller will sent it to server. In the collaborated hospital the patient's heart rate, pulse and body temperature data will send through server. In hospital the respective doctor will continuous monitor patient's health system. If that patient will be in critical condition then t the doctor will suggest the treatment to that patient in ambulance. In this project, the sensor in the ambulance will collect the patient's information (temp, pulse, heartbeat) by using three Sensors. The patient's information will be passed through the server. These information will be viewed by the doctor from server and suggest the treatment to the patients in the ambulance.

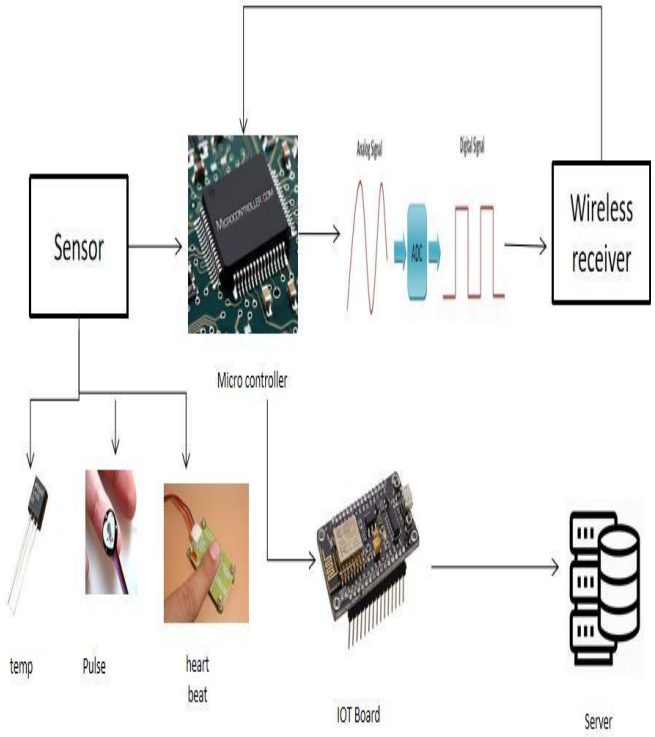

Fig 4: The Proposed Architecture

(iii) SYSTEM REQUIREMENTS

- Microcontroller
- Wireless transmitter-node mcu
- Wireless receiver
- Heart rate sensor
- Pulse rate sensor
- Temperature sensor

- Arduino ide
- Mysql
- Embedded c
- Php
- java

(IV) APPLICATIONS

Reduces rate of death by receiving immediate, appropriate first-aid prescribed by doctor.

- Immediate monitoring
- Appropriate first-aid
- Finding nearest hospital

IV. CONCLUSION

In this paper, we propose an IOT-based system for patients with the risk of heart attack and uneven body temperature or any other sever condition in ambulance. If the condition is critical the information about the patient will be sent to the hospital database. This paper proposes a system to update patient data to hospital servers for analyzing. The doctor can view patient details, before the patient entering in to the hospital. We approach a system which is used to connect the ambulance and hospitals.

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