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IOT BASED SMART HOSPITAL MANAGEMENT SYSTEM

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Abstract

IOT based Smart hospital management system aims to develop a Smart Hospital Management System using IoT Integration.Leveraging modern technologies suchasRFID tags & multiple sensors aims at building a better means of storing and retrieving patient data. RFID technology helps us to monitor the status of the patient by tracking all the health services given to patients. RFID systems areusedfor hospital Information systems and they provide full information about patient identification, token number and medicines. In this paper we proposed an electronic wifi controller based IoT hospital management system. This project uses the hardware kit to get the patient id and patient health history. It will send the patient id & other details to the web server system. The patient details can be accessed by the doctor via a python based web system, Specific ID used for logging into the doctor's account. The doctor can view and update patient's medical records and prescriptions. It mainly deals with monitoring the health status of a human bodylikeHeartBeats,Bloodoxygenlevel and Temperature. It aims at standardizing data, consolidating data, ensuring data integrity and reducing inconsistencies.

Keywords:

ArduinoMicrocontroller,RFIDtechnology,IOTPlatform.

1. INTRODUCTION

The goal is to create an effective health system for the user andtoimproveremoteaccesstothesystem.Ontheotherhand, the Internet of Things can be helpful in certain situations. The Internet of Things (IOT) aims to connect every device to the Internet to ensure that it is possible to access these things from anywhere, at any time, and over any network. Mobile phones, smart homes, smart appliances, digital health, intelligent vehicular, smart cities, and smart grids are just a few of the spectacular intelligent applications. The mission of Health for All is to ensure that everyone has access to high quality, sufficient medical services. This is a substantial challenge for developing nations with sizable rural populations. The nearby hospital emergency patients can be found using the app. This yields quick and more precise outcomes. Therefore, our primary aim is to establish an Android app for "medical emergencies". A strong, adaptable, and simple-to-use hospital administration system was created togivehospitalsthebestpossibleadvantages.

Thehospitalmanagementsystemwascreatedspecifically forhospitalswithvariousspecialties.Ourprojectsaretherefore created for both urban and rural hospitals and clinics. Both urbandwellersandthoseinruralareascanaccessit.Weoften noticethatpeopledonotgetpropertreatmentattheappropriate time. In rural areas, people will not search for multi-specialty hospitals for minor accidents or emergencies; they will always lookforminiclinicsorsmallhospitals.Thedoctorsmaynotbe present 24x7. They may be absent, or they might go for some other work. Without knowing this information, people wander in search of hospitals during times of emergency, and they get frustrated, and the patient's condition worsens. So to overcome this problem, we have developed an application with a number of features. They are

- Checks the availability of a Doctor.
- Suggestthenearesthospital.
- Suggestaspecifichospitalforaspecific ailment.
- Trackstheambulance.
- Sendstheconditionofthepatienttothe hospital before they arrive.

2. METHODOLOGY

In today's technological era, every hospital uses biometrics for attendance sowecanstorethosedatainthecloudandlinkthose data with our application. With the help of those data, our application shows whether the doctor is available or not. If the hospital does not have biometric attendance, we can use Radio Frequency Information (RFID) as shown in fig.(or)wecanuse toggle button responses from where the doctors can give their response using the toggle button which can be stored and displayed in the user interface as shown in fig., So that we can share the data through IoT inourmobileapplicationandupdate the application regularly. We also use GPS to track the ambulance. We also linked google maps to our application, which tracks the nearest hospital. The Arduino IDE platformis used for programming. The algorithm's function is todetectthe position of the vehicle unit and transmit the GPS coordinates through the GSM module as shown in fig. The nearby hospital location can be obtained by integrating google maps with our application. Our application can be downloaded by any person irrespective of their location. With a single application, it is possible to check the availability of doctors, locate the nearest hospital,tracktheambulance,andsendthepatient'sconditionto thehospitalbeforethepatientarrivessothatthehospitalcan

make necessary arrangements. The process of this intelligent hospital management system is shown in fig. The first activity allows the user to check the nearby hospitals through our application.

ArduinoUno: Itactsasthecentralcontrollerforthesystem.

HeartRateSensor: Monitorsthepatient'sheartrate.

TemperatureSensor(DS18B20): Measuresthebody temperature of the patient.

GPSModule: Determinesthecurrentgeographicallocationof the patient.

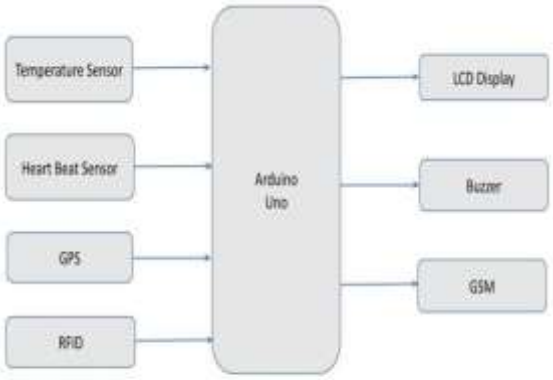
GSMModule: SendsanSMScontaininghealthandlocation information to designated caregivers.

RC522RFIDReader:ScansRFIDtagstoidentifytwo different individuals and their respective data.

I2C LCD Display: Displays real-time data (heart rate, temperature,etc.)onasmallscreenforimmediatemonitoring.

RFIDTags:Usedforidentification.Tag1correspondstothe first patient, and tag 2 corresponds to the second patient.

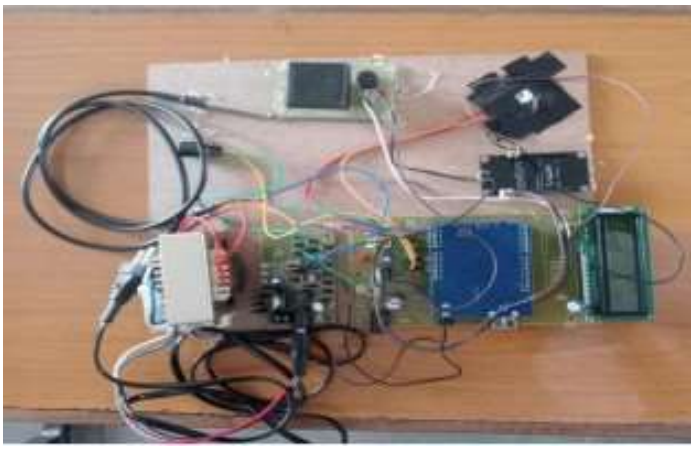
3. Modeling And Analysis



Arduinoisaprototypeplatform(open-source)basedoneasy-to-use hardwareandsoftware.Itconsistsofacircuitboard, which can be programmed (referred to asamicrocontroller)and a ready-made software called Arduino IDE (Integrated Development Environment), which is used to write and upload the computer code to the physical board.

4. RESULTSANDDISCUSSION

A smart hospital management system integrated with IOT technology enhances patient care and operational efficiency by continuously monitoring vital signs through wearable devices and combining diverse data sources for comprehensive health insights. This integration enables automated patient admission, roommanagement,andbillingprocesses,alongwithrole-specific functionalities for staff. Real-time data analytics provide immediateaccesstopatienthistoriesandhealthmetrics, Supportingbetterdecision-making.SystemslikeAyusmat, utilizing platforms like SAP HANA, exemplify these capabilities, promoting automation and improved workflow in healthcare.



5. CONCLUSION

Since the Hospital Management System is essential for maintainingdetailabouttheDoctor,Patient,Hospitalstaffetc. weunderstandthatbyusingtheHospitalManagementSystem project the work became very easy and we save lot of time. Hospital administrators would be able to significantly improve the operational control and thus streamline operations. This wouldenableittoimprovetheresponsetimetothedemandsof patient care because it automates the process of collecting, collating and retrieving patient information. Accounting sometimes becomes awfully pathetic and complex. This product will eliminate any such complexity.

6. REFERENCES

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