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HMS-Smart HealthManagement

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Abstract— **Maintaining good health and having an efficient healthcare system are crucial for individuals. The recent outbreaks ofdiseaseslikethecoronavirushavehighlightedthesignificanceofhealthcareevenmore.Insuchpandemics,aremotemonitoringsystembased on the Internet of Things (IoT) has emerged as a promising solution. The healthcare industry has been actively exploring thepotential of IoT, which is a rapidly growing field. The primary goal of this system is to enable remote healthcare monitoring, allowingindividualstomonitortheirhealthfromanylocationtheydesire.ByleveragingthepowerofIoT,thistechnologyaimstorevolutionizehealthcaredeliveryandimprovepatientoutcomes.**

Keywords—***IOT,GSMModule,ESP8266,PulseSensor,TemperatureSensor***

INTRODUCTION

Ensuring goodhealth and establishing aneffectivehealthcare system areof utmost importancefor individuals. Recent events suchas the COVID-19 pandemic have further underscored the significance of healthcare. In addition, individuals with physicaldisabilities and the elderly often require reliable healthcare systems. One potential solution to address these challenges is theimplementation of remote health monitoring systems. Leveraging the Internet of Things (IoT) technology is particularlyadvantageous due to its rapid advancements. By utilizing IoT-based health monitoring services, prompt diagnoses can be madeeven in the absence of physicians, while also mitigating the rapid spread of diseases like COVID-19. Remote doctors can utilizeIoT to monitor patients' health conditions and diagnose their well-being from a distance. A portable physiological monitoringframework continuously tracks vital parameters such as heartbeat and temperature, transmitting the data for monitoring andstorage on a server. This continuous monitoring and control system aims to provide remote health monitoring, enabling authorizedindividualsanddoctorstoaccessthestoreddatafordiseasediagnosis.Themainobjectiveofourprojectistodesignandimplementasmarthealthmonitoringsystem.Thesystemutilizessensorstotrackpatients'healthconditions,transmittingtheinformationtodoctors through the internet. Furthermore, the development of this health monitoring system seeks to reduce healthcare costs byminimizing the need for frequent in-person doctor visits. Individuals requiring continuous monitoring outside of hospitals willbenefit from this smart healthcare solution. Additionally, effective communication between nearby clinics and city hospitalsregardingpatients'healthstatusiscrucial.Ourworkpresentsasmarthealthmonitoringsystemthatutilizesbiomedicalsensorsto monitor patients' conditions, with the internet serving as a means to disseminate relevant updates to concerned parties. To facilitatedatavisualizationandstorageonsmartphones,awebsiteandAndroidapplicationhavebeendeveloped.TheAndroidapplication allows easy access to patient information for both the patient and their family members. This project aims to implement a smartpatient health tracking system, utilizing sensors to monitor patients' well-being and utilizing internet connectivity to promptlyinform loved ones in case of any anomalies. By reducing physician visits and hospitalizations, the development of remotemonitoringsystemscancontribute tolowering healthcare costs.

PROBLEMSTATEMENT

The well-being of individuals plays a pivotal role in leading a fulfilling and healthy life, emphasizing the need for a robust healthcaresystem. Recent events, particularly the COVID-19 pandemic, have underscored the criticality of healthcare systems. Tragically,many lives were lost during the pandemic due to insufficient treatment and a shortage of hospital beds. Physically challengedindividuals and the elderly, who require specialized care, also necessitate a flexible and reliable healthcare system. Bedriddenpatients, experiencing partial or complete paralysis following a stroke, require continuous health monitoring. Accessing hospitalsposessignificantchallengesforfinanciallydisadvantagedindividualsandthoseresidinginruralareas.Existinghealthcaresystem soften face limitations in maintaining continuous health monitoring. Additionally, it is essential for doctors to have convenientaccess to patients' health data, even when physical proximity is challenging. To address these concerns, the implementation of aRemote Health Monitoringsystemcanbeinstrumental.

EXISTINGSYSTEM

SeveralresearchstudieshaveputforthproposalsforIoT-basedhealthmonitoringsystemsanddiseasepredictionutilizingdifferenttechniques. In contrast to the existing systems, the proposed system exhibits notable differences. In existing IoT-based healthmonitoring systems, data is typically viewed only at the patient's location, employing pulse sensors, temperature sensors, andBluetoothmodules.SomeofthesesystemsincorporateaWi-Fimodulealongsidesensorsandaccessacloudplatformtovisualizethecollecteddata.Moreover,existingIoT-basedhealth monitoringsystemstypicallyrelyonACpowerforoperation.

PROPOSEDSYSTEM

Due to the rapid advancement of technologies, IoT has emerged as a leading platform for remote-based smart health monitoringsystems. The ESP2866 mini module offers microcontrollers the capability to establish WiFi connections and create TCP/IPconnections. Our proposed system encompasses a continuous health monitoring system that monitors essential parameters suchas the patient's condition and the room environment. Key parameters for determining an individual's health condition includepulse rate and body temperature. We propose utilizing Pulse sensors for pulse rate measurement, TMP37FT9Z sensors for bodytemperature measurement, and DHT11 sensors for measuring humidity and room temperature. In addition to monitoring thepatient'shealth,wealsorecognizethe importanceof monitoringthesurroundingenvironment.

Data captured by the system is transmitted to a cloud platform through a GSM module, enabling doctors to remotely access thepatient's health status. The health monitoring system is powered by a battery, which in turn is powered by AC power. Thisapproach enables the implementation of a continuous health monitoring system. An LCD display can be utilized to monitor thepatient's health in real-time. Our proposal aims to ensure that the health monitoring system operates effectively in remote areaswithoutrequiringadditionaltechnologies.AnAndroidapplicationwillbedevelopedtoprovidedirectaccesstoIoTreadings,andaw ebapplicationwillbeavailableforhospitalstoaccessthepatient'sdata,facilitatingefficienthealthcaremanagement.

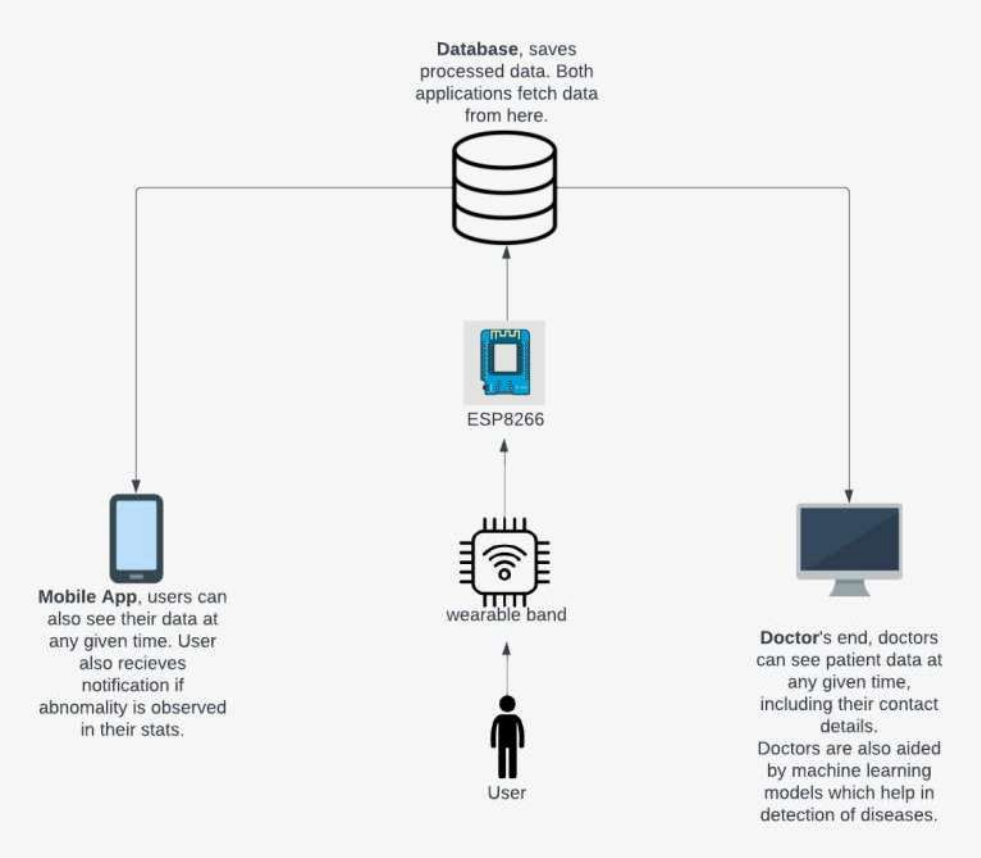


fig.1.1SystemArchitecture

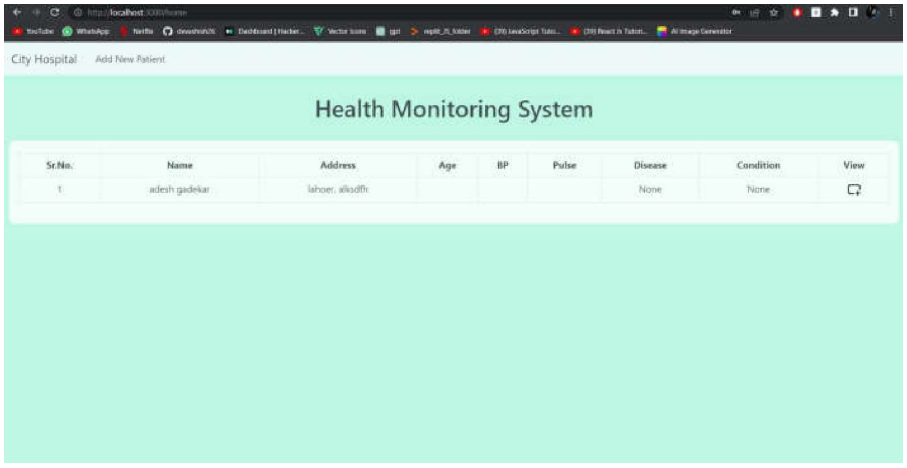
IMPLEMENTATION

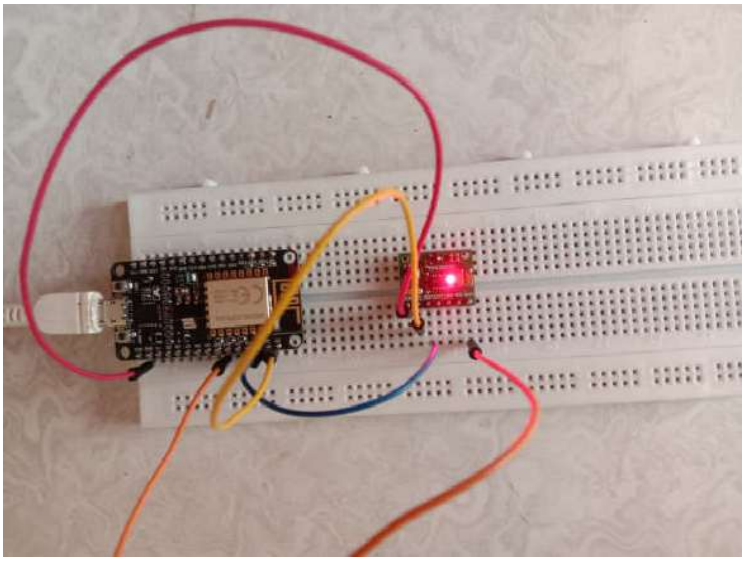
Our primary goal is to develop a Smart Health Monitoring System that enables continuous and uninterrupted monitoring ofthepatient'shealthstatus.Recognizingthelimitationsanddrawbacksofexistingsystems,weaimtoprovideacomprehensivesolutionforthehealthcarefield.WiththeimplementationofaSmartHealthMonitoringSystem,thepatient'shealthconditioniscontinuously monitored,andthecollecteddataisautomaticallytransmittedto aserverforviewingonadedicated website.Thisallowscaretakerstostayinformedaboutthepatient'shealthstatus,whilealsoenablingdoctorstoaccessthepatient'sdatainreal-time.

Our proposed system incorporates nonstop health monitoring and control instruments that securely store patient informationin a database, ensuring continuous monitoring of their health. IoT technology is leveraged to enable remote healthcaremonitoring systems. Authorized individuals can access the stored data through an IoT platform, facilitating virtual diseasediagnosisbased on the collected patientinformation.

For fitness enthusiasts utilizing our system for their personal fitness goals, the sensor results are directly transmitted to theuser's application. To ensure personalized health monitoring, users are required to provide their basic information, allowingthe device to assess their current health status accurately. In cases where a doctor recommends continuous health monitoringfor a patient, the doctor will provide the patient with an ID to register on the application. The patient's ongoing health detailswill then be accessible on the web application, enabling hospitals to continuously diagnose the patient's condition and takeimmediateactionifanysuddendeterioration inhealth occurs.

Screenshots





CONCLUSION

- AneffectiveSHMShasbeendevelopedtocontinuouslymonitorthepatient'scondition,evenintheabsenceofadoctor.

- Thesystemcollectsvitalinformationincludingtemperature,bloodpressure,andpulserate,whichisthentransmittedtothephysician.

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