AMIGO APPLICATION

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***Abstract*—A health application is a software program that is designed to help users track and manage their health and wellness. These apps often provide features such as the ability to log and track exercise, monitor diet and nutrition, track sleep patterns, and set and track health goals. Health bands, also known as fitness trackers, are wearable devices that often have many of the same features as health apps, but allow users to access and track their health data on the go. Some health bands also have additional features such as heart rate monitoring and GPS tracking. Both health applications and health bands can be useful tools for individuals who want to improve their overall health and wellness,but it's important to choose a reputable and reliable product and to be mindful of data privacy and security issues.The proposed system could be helpful for individuals who are at risk for heart conditions and want to closely monitor their health, as well as for caregivers and family members who want to ensure the safety and well-being of their loved ones. In order to develop an app like this, you would need to work with healthcare professionals and experts in ECG technology to ensure that the app is accurate and reliable. Additionally the users would need to consider issues such as data privacy and security, as well as the necessary regulatory approvals for a healthcare app.**

***Index Terms*—Heart attack prediction and detection, Internet of Things.**

I. INTRODUCTION

Amigo App is an application especially for the old aged people and people seriously seeking medical care,which monitors the health status of a person,regulates the flow of medication to be taken and also acts as a reminder about the shortage of medicines,medicines to be taken and appointments with the doctor.The application will develop a reminder on the dates that are special for them, also they can saves their important documents in the application with high security. The app also provides emergency contact numbers like women helpline,ambulance etc. Health care applications are software programs that are typically accessed through a smartphone or other mobile device. These apps can provide a range of features, such as the ability to log and track exercise, monitor diet and nutrition, track sleep patterns, and set and track health goals. Many health care apps also offer features such as reminders to take medications or complete specific tasks, as well as the ability to connect with healthcare professionals or other users for support and motivation.Health bands, also known as fitness trackers, are wearable devices that are designed to track various aspects of an individual's health and wellness. These devices are often worn on the wrist and can track metrics such as steps taken, calories burned, and sleep patterns. Some health bands also have additional features such as heart rate monitoring and GPS tracking. Health bands allow users to access their health data on the go, and many can be synced with a health care app to provide a more comprehensive overview of an individual's health and wellness.

II. OBJECTIVE AND SCOPE

To develop a mobile application for the people seeking personal medical attention through regulated medications and personal reminders to ease their life.The main aim of this app is to lend a helping hand to the old aged people. By giving them support in all the health related issues.Even the guardians those are looking after them can use the applications.This helps them to be updated in case of health issues. Amigo App will determine the impacts of the medical conditions on the user thus giving you a safe secure storage system where you can store your documents safely,also we provide with the best diet plans regarding your medical conditions letting you decide what's best and what's not? Application ex centers towards middle aged people and old aged people in need of medical care. Apps can be accessed by the guardians to take care of their loved ones. Monitors the health status of a person, acts as a reminder about the shortage of medicines. The app also provides emergency contacts like emergency sos, ambulance,Fire force etc. Implementing a mobile system for alerting corresponding relatives and doctors in case of emergency, Regulates the flow of medication to be taken.They can save their important documents in the application.

III. LITERATURE REVIEW

A. Health Monitoring System using Wearable Sensor Network for Workers in Industries

A Health Monitoring System using Wearable Sensor Network for Workers in Industries is a device that integrates wearable sensors and health monitoring technology to track and monitor the health and safety of workers in industrial

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settings. This system can track various health parameters such as heart rate, body temperature, physical activity levels, and environmental factors such as exposure to hazardous materials or extreme temperatures. The wearable sensors in this system can be integrated into clothing or worn as standalone devices, allowing workers to move freely while their health data is continuously monitored[1]. The health data can then be transmitted to a central monitoring system, allowing managers and safety personnel to access real-time health data for each worker.

B. THE (Temperature Heterogeneity Energy) AwareRouting Protocol for IoT Health Application

THE (Temperature Heterogeneity Energy) Aware Routing Protocol is a routing protocol designed for IoT (Internet of Things) health applications. It is designed to address the challenges of routing data in IoT health networks, which are typically composed of a large number of low-power, battery-operated devices[2]. In IoT health applications, it is important to ensure that data is transmitted efficiently and reliably, while also conserving energy. The THE Aware Rout-ing Protocol takes into account the temperature heterogeneity of the network, which can have a significant impact on the energy consumption of IoT devices. The protocol uses this information to dynamically adjust the routing of data, taking into account the energy consumption of each device and the impact of temperature on energy consumption.

C. Contactless Respiration and Heartbeat Monitoring of Multiple People Using a 2-D Imaging Radar

Contactless Respiration and Heartbeat Monitoring of Multiple People using a 2-D Imaging Radar is a technology that allows for non-invasive monitoring of multiple people's respiration and heartbeat simultaneously.It uses a 2-D imaging radar, which is a type of radar that can produce images of objects in two dimensions, to detect changes in the position and movement of the chest and abdomen, which are caused by breathing and heartbeat[3]. The advantage of using a 2-D imaging radar for respiration and heartbeat monitoring is that it allows for non-contact monitoring, meaning that there is no need for sensors to be physically attached to the body. This can be especially beneficial in situations where monitoring multiple people at once is necessary, such as in large public gatherings, airports, or hospitals.

D. Small-Scale Perception in Medical Body Area Network

Small-Scale Perception in Medical Body Area Networks refers to the use of sensors and other technologies in medical body area networks (MBANs) to gather data and information about a patient's health and well-being. MBANs are small, wireless networks that consist of wearable and implantable sensors and devices that can monitor and transmit information about a patient's vital signs and other health parameters.Small-scale perception in MBANs involves using sensors and other technologies to gather data about a patient's health and well-being at a high frequency and with high accuracy[4]. This information can include data about the patient's heart rate, body temperature, blood pressure, respiratory rate, and other important health parameters.

The information gathered by the sensors and other devices in an MBAN can be used to provide real-time monitoring of a patient's health, which can help healthcare providers to identify potential health problems and respond more quickly and effectively to changes in a patient's condition. Additionally, by using small-scale perception in MBANs, healthcare providers can gather more detailed and comprehensive data about a patient's health, which can improve diagnosis and treatment decisions.

IV. EXISTING SOLUTIONS

The following are the existing solutions for predicting the movement of the stock market:

A. CareZone

CareZone is a holistic healthcare management app that makes it easier for patients to remember to take their medications, order prescription refills, record important vitals, and keep track of doctor appointments. Within the CareZone app, users can set up medication reminders in groups, for multiple medications taken at the same time daily, or individual customized reminders, for medications taken on a unique schedule. CareZone has a scan feature that makes it easy for users to add new medications to their account. Through the CareZone pharmacy, users can get free home delivery for ongoing prescriptions. CareZone will send users their medications in pre-sorted pill packs organized by dose, date, and time, helping to ensure that users take their medications as scheduled, and in the correct dosages[5]. The CareZone app also lets users track other health information, like blood pressure and blood glucose, and provides answers to basic health questions through its personal Care Advisor.

B. MedPlan

MedPlan describes its app as a "mobile health companion." This app, which is currently only available for Android devices, lets users create reminders for taking their medications and for appointments with doctors and healthcare providers[6].

It also features educational resources, like daily health tips, a health news feed, and quizzes, to help users learn more about healthy habits, common conditions, and treatment options. Users can also keep track of their health history and habits with MedPlan's health diary feature. The app also includes a tool for monitoring vitals like weight, temperature, pulse, respiratory rate, blood pressure, blood sugar, and more.Taking medications as scheduled is one important way to help improve your health. For users who want to learn more about living a healthy lifestyle, the MedPlan medication reminder app offers additional tools to help educate people about how to make the most of their health.

C. MangoHealth

MangoHealth, which is available for both iOS and Android devices, is a free app designed to make medication and healthcare management fun. The app helps users create a daily schedule that includes medication reminders, blood pressure and blood glucose checks, weight and activity trackers, and customized reminders for other healthy habits.Users can set their medication reminders as needed, as well as snooze or skip alerts if necessary. MangoHealth also keeps all medication information in one location, so users can easily see how their medications will interact with other prescription or over-the-counter drugs, as well as food and drinks[7]. MangoHealth also has a note-taking feature, so users can track how their medications are working, and share this information with their doctor or healthcare provider. The app also incentivizes users to stick to their medication schedule with a rewards program that includes raffles for gift cards and charitable donations.

V. Proposed Method

The details related to the patients like disease suffered from,treatment given from. This application provides an alert message that they are about to take the medicine,also if the medicine is not sufficient the application will generate the reminder, giving them the details about the diet plans according to their health problems . Apps also provide the reminder about the special days of the dear ones like birthdays, wedding anniversaries, they can also set the reminder on the app that if they have to visit anywhere out of the city or town(Hospital,shopping,functions..). A Health band(Hardware) is integrated with the application in order to detect the heartbeat,pulse,blood pressure,temperature etc and sends the updates and records to the guardians and health centers.

A. Hardware Interface

VI. Hardware Interface

The hardware module consists of a heart beat sensor,a microcontroller,an LCD display and a wifi module.
Here we use the following components:

1) Pulso Sensor - Pulse Sensor
2) Arduino Nano - Microcontroller
3) Node MCU - wifi Module
4) LCD Display

Here the pulso sensor senses the pulse data of the patient and it is fed into the arduino nano.The arduino nano offers the same connectivity and specs of the UNO board in a smaller form factor.It is programmed using the Arduino Software (IDE), Integrated Development Environment common to all arduino boards and running both online and offline.Arduino Nano was selected for our system because it smaller compared to it's latters and hence it is more portable and easy to carry.
The arduino then displays the data onto the LCD display where the patient can view the real-time heart rate and also the data is fed into the Node MCU which transmits the data into the network. This Data is used by the software for further applications.

A. Software Interface

VII. Software Interface

To receive and analyze data from the IoT device, we use a heart rate collector interface in the smartphone. As described in the hardware section, we developed a wifi communication channel that is capable of transmitting data from the pulse and temperature sensors to the smartphone. On receiving data from the sensors, the system processes the data to identify any abnormality in the heart rate.

To transmit data to the smartphone through wifi channel, we opened a socket from the Android application that connected to the transmitting signals of the Node MCU. To communicate with the Arduino, we created a software serial object and specified the transmitting and receiving pins. When the wifi is supplied with power, it immediately enters the pairing mode, where it waits for any device to connect to it. Then the smartphone is opened through the application and it starts searching for the devices. After a successful connection, the application will produce a message on the screen informing the user that the connection was successful, and the Node MCU's LED will turn from red (pairing mode) to green (connected mode).

After connecting to the IoT device, the application will automatically start receiving the sensors data. The application parses the pulse data into separate arrays that are then sent to different pages where they are plotted in real time. The user has the option of either viewing the separate plots for each sensor data or viewing a page that has both plots in real time. While data is being plotted, the algorithm is constantly examining the ECG signal waiting for any abnormality.

The user will have the option of either signing up or logging in depending on whether the user has an account or not. If the user has an account he/she can simply enter the username and password to login. If not, clicking on the signup button will take the user to another page where he/she will be asked to enter some information to create an account. The user will then be directed to the home page of the application where he/she will have different options. The user will need to connect to the IoT device before he/she can start viewing his/her data. This can be done by pressing the connect button which will take the user to another page where he/she can find the device.

A. Functions

1. USER- They can store and access their personal data any time and anywhere.They will also have access to different diet plans according to their medications taken.They are also reminded about the days and events of their loved ones.

2. ADMIN-The Foundation of the system that regulates the entire functioning of the application and provides a user-friendly environment to the user. They also focus on varying health status of the end user

B. Functional Requirements

Users or the guardians can get this application in the play store and download it. After the download is completed a login interface will appear and the user should login to the application with the required credentials.

C. Non-functional Requirements

1) Performance: The server of the app can handle a large number of users without network trafficking.

2) Security: There will be a password at first to ensure the integrity of the application as the important documents of the user are being saved in the database.The app provides secure storage for documents related to the user with a biometric security system

3) Reliability: As the app is intended for middle aged people their details will be very safely stored in the database without any harm. All the documents saved in the applications will be safe and can lock the documents with a password.

4) Maintainability: When the app faces any issues, it will be solved by refreshing the application.Newer updates and notifications will be immediately available as pop-up messages.

5) Availability: The app will be available any time under internet connectivity.

6) Portability: As the application is available in the mobile phones it is portable and easier to use at any time anywhere.

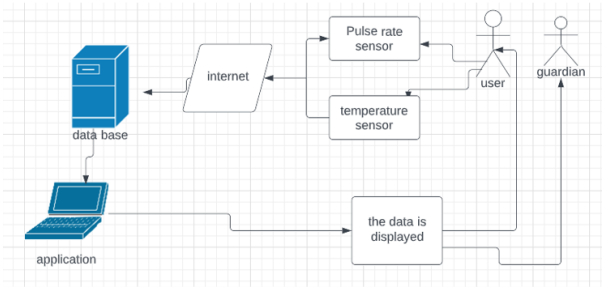

Fig. 1. Architecture of proposed system

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