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Intelligent Patient Tracking Via the Internet of Things

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Abstract: - Patients are confronted with a challenging situation in which they may perhaps observe the demise of an individual due to a cause associated to infection. The individual under observation was monitored with the aforementioned system. The CPU and LCD display are interconnected in order to facilitate the transmission of data to a web server. The prediction of an illness is made by analysing the symptoms reported by the user. In the event that the patient's condition exhibits complexity, it is imperative to promptly inform the attending physician. Subsequently, the physician proceeds to prepare for the administration of medical care to the patient, either by awaiting the patient's arrival or promptly initiating a visit to the patient's residence. The ideas underlying the Internet of Things (IoT) have been extensively employed in the realm of healthcare to facilitate the connection of medical resources, so enabling patients to get intelligent, dependable, and efficient healthcare services. One potential paradigm that can leverage the advantages of the Internet of Things (IoT) is the application of health monitoring for active and assisted living, which aims to enhance the lifestyle of patients.

Keywords: IOT, GPS, Health care

Introduction

Given the imperative for women to safeguard themselves from emergencies and potential abductors, this technology effectively disseminated a text message including a real-time location to their family members. The provision of high-quality and effective medical care is of utmost importance in facilitating a prompt recovery. Our programme includes a virtual advisor who will provide assistance to the patient regarding this matter. Minimise your endeavours to attend medical facilities as well. The objective of this project is to develop a system utilising Raspberry Pi technology to monitor and ensure the well-being and safety of women [1].

The biggest concern thus far has been the safety of women, representing a prominent issue of apprehension. Ensuring the safety of women is of paramount importance, regardless of their location, be it within the confines of their residence, in public spaces, or within the professional sphere. There exists a disparity in the severity and fear-inducing nature of certain crimes committed against women, particularly instances of rape. A significant proportion of women across various age groups persistently experience victimisation in the form of violence, domestic abuse, and sexual assault.

The average lifespan has experienced a substantial increase, particularly in nations with higher levels of economic prosperity. This development is worthy of celebration and should be regarded as an opportunity for individuals to experience extended and enhanced lifespans. Nevertheless, due to the increased healthcare requirements of older adults compared to younger individuals, there is a pressing need for substantial enhancements in both the healthcare system and the living environment [2]. Chronic illness is more prevalent in older individuals as a natural consequence of the ageing process. The cost of healthcare is rapidly increasing in all countries worldwide, in correlation with the demographic challenge posed by an ageing population. As an illustration, it is noteworthy that China allocated a sum above 50 million Yuan, equivalent to 4.58% of its Gross Domestic Product (GDP), towards the development of healthcare infrastructure in the year 2001. According to the cited source [3], the aforementioned figure had increased to over 400 million Yuan by 2015, which accounted for approximately 6.05% of the country's GDP.

Furthermore, alongside the rising prevalence of chronic ailments such as diabetes, cardiovascular disease, obesity, and various others, there is a simultaneous increase in the average age of populations in many cultures. Advocating for the enhancement of both physical and mental welfare. Preservation of independent living is more imperative from both a mental and physical standpoint. One such methodology involves the utilisation of sensing technology, remote health monitoring, and ultimately, the identification of individuals' everyday activities. From a technical standpoint, it can be observed that the Internet of Things (IoT) is rapidly garnering attention in various domains, with a notable emphasis on personalised healthcare [4].

In our nation, crimes such as abduction, acid attacks, and ragging are prevalent. Nevertheless, women have significant challenges when dealing with such situations. The management of health monitoring is currently facilitated using several system technologies [5]. However, the integration of two separate areas of concern is

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observed inside a singular system. Primarily, its application pertains to the domain of human security. In the absence of a medical professional, individuals are capable of comprehending their own state of health. Furthermore, the physician utilises a sensor to observe and assess the patient's physiological well-being [6].

Working Methodology
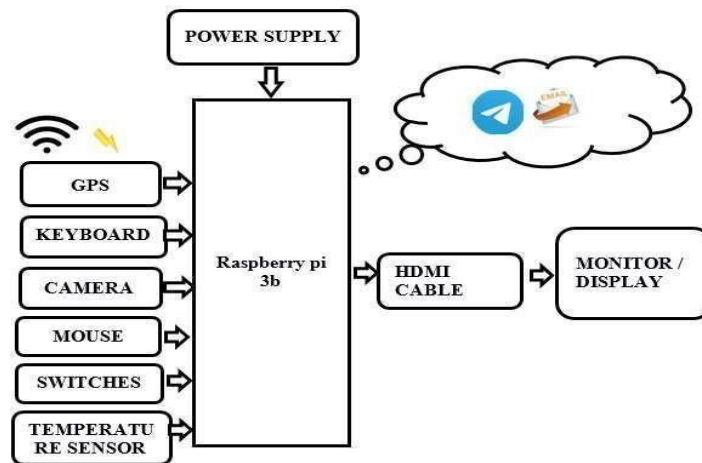
Proposed System

The "IoT Based Health Monitoring and Women Safety Device" in this project is designed based on two specifications.

Hardware requirements

2. Software Prerequisites

Hardware specifications

A. Model Raspberry Pi3 B+:

The Raspberry Pi Foundation and Broadcom collaborated in the United Kingdom to develop a series of compact single-board computers known as Raspberry Pi. Due to its unexpectedly high popularity, the initial model was sold outside its intended market, including applications in the field of robotics [6].

B.GPS Sensor

The NEO-6M GPS module can be classified as a comprehensive GPS receiver. The device is equipped with a ceramic antenna measuring 25 x 25 x 4mm, which effectively facilitates satellite detection. By monitoring the power and signal parameters, one may assess the performance of the module. In the event of an inadvertent disruption of the primary power supply, the module has the capability to retain data due to the presence of a data backup battery.[7]

C. Pi Camera

The camera module, equipped with a 5-megapixel OV5647 sensor, establishes a direct connection to the Raspberry Pi, enabling the capture of high-resolution still images and 1080p video. The most recent iteration of Raspbian exhibits plug-and-play compatibility, rendering it highly suitable for various applications such as time-lapse photography, video recording, motion detection, and security purposes.[8]

D. Raspbian Operating System

Raspberry Pi OS, a derivative of Debian (formerly known as Raspbian), serves as the operating system specifically designed for the Raspberry Pi platform. According to the Raspberry Pi Foundation, it has served as the primary operating system for the Raspberry Pi series of compact single-board computers since 2015. The initial iteration of Raspbian was developed as an independent project by Mike Thompson and Peter Green.

E. Cloud Thing speak:

ThingSpeak is an open-source Internet of Things (IoT) application and API that facilitates the storage and retrieval of data from various devices using the HTTP and MQTT protocols. This can be done either over the Internet or within a Local Area Network (LAN). The Thing Speak platform enables the development of applications pertaining to location tracking, sensor recording, and the establishment of a social network centred around items, which can provide status updates.[9]

F. The Zoom Meet

Zoom Video Communications, Inc. is a United States-based corporation specialising in the development and production of communication technologies. The company's corporate offices are located in San Jose, California. This technology serves several purposes such as facilitating teleconferencing, enabling telecommuting, supporting distance learning, and fostering social interactions with individuals located at a significant geographical distance. Additionally, it provides video telephone and online chat functionalities through a cloud-

based peer-to-peer software platform.

G. The Telegram App

The Telegram software provides users with the ability to engage in online messaging. The internet enables the transmission of any message or data from an Internet of Things (IoT) device through the utilisation of a Telegram bot. In this approach, requests for food supplies and reservations for petrol are transmitted over the Telegram platform.

H. Bots

Bots lack an online status or a timestamp indicating their last activity; instead, the interface merely exhibits the term "bot" in lieu of such information. The server may promptly erase older messages once they have been processed due to the limited cloud storage capacity of bots. Bots lack the capability to initiate and engage in conversations with individuals. [10]

In order to gain access, individuals are required to be included in a group or receive a message from another member. In order to locate your bot, users can employ the t.me/bot username links or conduct username searches. In the realm of bot usernames, it is customary for all such usernames to conclude with the term "bot." This convention is exemplified by usernames like @TriviaBot or @GitHub bot.[11]

1.2 Working

There are currently operational devices that serve dual purposes, specifically health monitoring and women's safety. To initiate the process of monitoring our health, it is important to first select the body's temperature and identify the symptoms being experienced. Based on the user inputs provided, our system proceeds to make predictions regarding illnesses that have been pre-programmed within its database.

In order to enhance the safety of women and facilitate the apprehension of criminals, our second feature offers real-time location tracking accompanied by live video call functionality. In addition, it is possible to consult with physicians who are currently available, enabling us to remotely monitor our well-being.
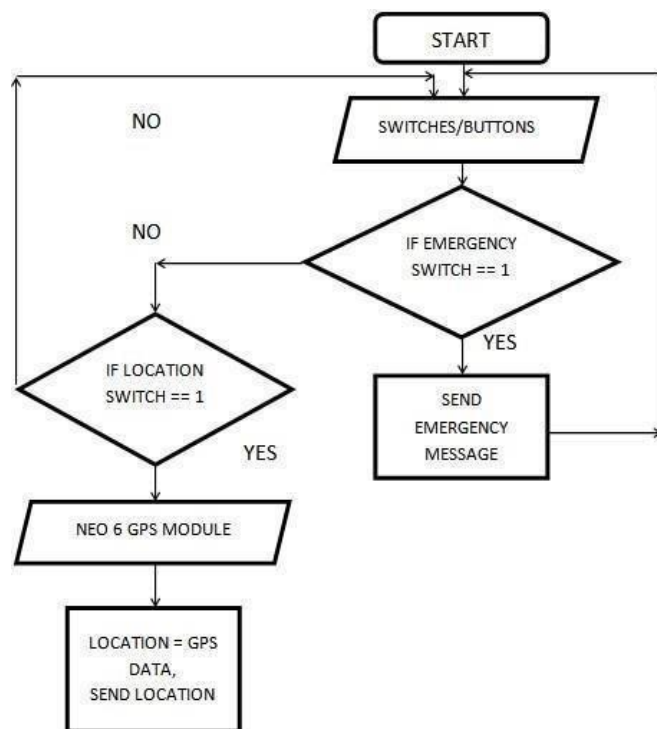
1.3 Flow Chart
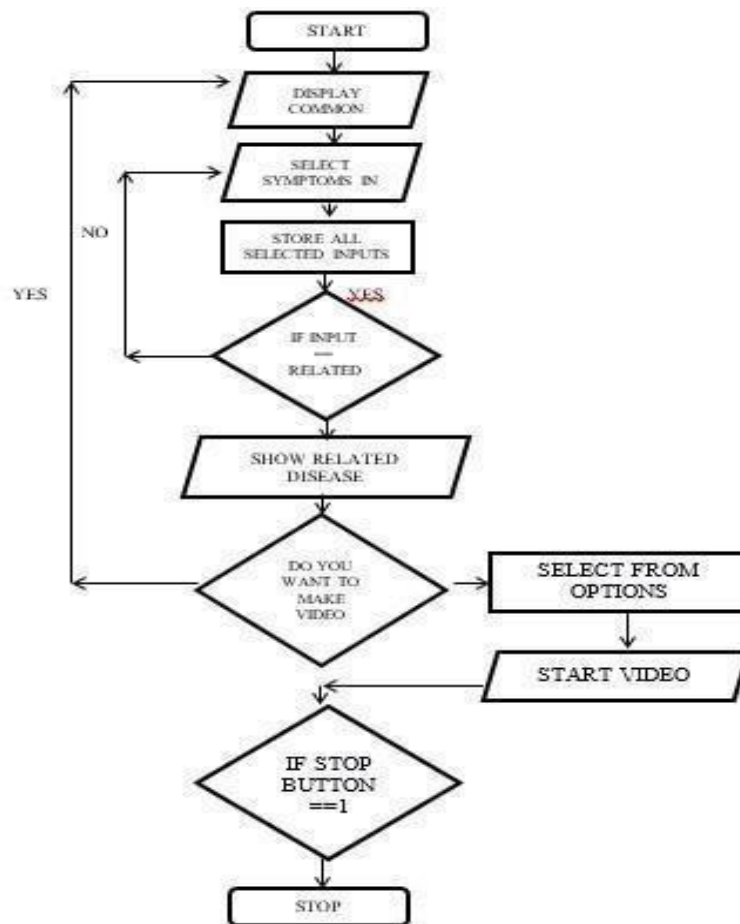

Fig 4: Flowchart of women safety

Fig.5. Flowchart of Health Monitoring

There are several advantages.

1.   Home health monitoring conducted by clinicians who are attentive to patient well-being.

In addition, a video call system is provided to facilitate convenient communication between patients and their physicians. This system also allows for the possibility of conducting certain medical procedures remotely in situations of urgent necessity.

In order to facilitate ease of access, locations are appropriately marked with indicators pertaining to women's safety.

The technology is cost-effective and very user-friendly. A system that operates autonomously.

The topic of applications is of significant academic interest.

The utilisation of this technology has the potential to facilitate the development of intelligent healthcare facilities.

This methodology might be employed to locate the individual who is currently unaccounted for. This concept can also be applied to Smart medical devices.

In order to mitigate the occurrence of routine criminal activities

Results

Fig 6. Health monitoring system

Fig 7. Mail is sent to our Family Members
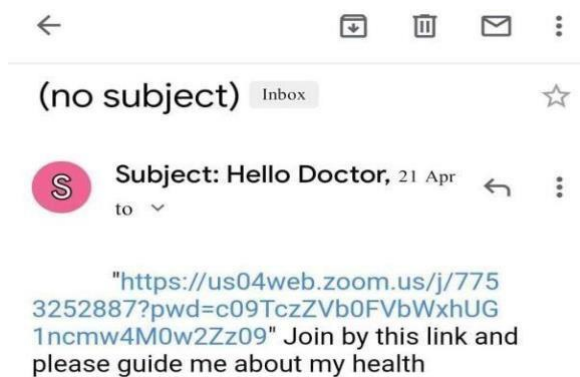

Fig 8. Snapshot of Location.

Fig 9. Mail of joining video call on ZOOM

The user-selected symptoms and body temperature readings are used to forecast the illness as an output.

Table 1: Readings of predicted disease

Sr.No.	Temperature In ^0C	Symptoms	Predicted Disease
1	30	Chills	Pneumonia
2	35	Sweating	Hypothermia
3	32	Hypertension	High Blood Pressure
4	33	Diarrhea	Diarrhea
5	34	Joint pain	RA(Rheumatoid Arthrtis)
6	31	Chest Pain	Asthma
7	40	Fever	Hyperthermia
8	38	Dry cough	Pneumonia
9	39	Vomiting	Food poisoning
10	32	Breathless	Chronic renal disease

Conclusion

Information about the patient's state of health must be current and accurate. The purpose of this project is to offer a concise analysis of the various approaches to disease forecasting and health monitoring that are now in use and are supported by the internet of things. Second, it demonstrates a system for the protection of women that is capable of providing real-time location tracking and enabling older users to access and transfer information through the use of cloud computing.

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