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IMPLEMENTATION OF PATIENT MEDICATION ALERT FRAMEWORK

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ABSTRACT

Medication alert system for patient is a wellbeing checking framework utilizing IOT depicts the assortment and interoperation of patient information gathered from the sensors from the medical clinics through IOT Innovation. The gathered sensor information will uphold the specialist in the crisis circumstance for the advancement and improvement of patient wellbeing. The equipment stage to carry out the task comprises of a sensor and Raspberry Pi 3 Model B prepared in a manner to speak with specialist through Web and PDA. This proposed thought will assist specialists with being familiar with the condition of patient wellbeing and screen anyplace on the planet. In this proposed thought the sensors assemble the clinical data of the patient that incorporates patient's pulse, circulatory strain, and heartbeat rate then, at that point, utilizing camera the patient is energetic observed through the Raspberry unit and this data is shipped off the Web and put away in a clinical server. The specialist and patient can screen the patient information from any spot of the world through the gave IP server address whenever. The crisis alert is shipped off the patient on the off chance that the sensor esteem is surpassed the limit information. In this manner, the patients' wellbeing boundaries are observed exuberant and standard checking through the clinical server to a specialist will assist with creating compelling determination and practically precise consideration can be given. The information assortment through the IOT will assist the patient with recuperating effectively and furthermore upgraded clinical consideration can be given to the patients with minimal expense.

I.INTRODUCTION

1.1 Aim of the project:

In this we are implementing a new technique that which we can monitor the patient condition very easily. We are implementing a medical chamber with time adjustment system. With the help of time management and motor setup we can open the medical chamber automatically. The monitoring information will be automatically uploaded to the cloud and the doctor can be monitored very easily by their access. We are monitoring the patient pulse, temperature.

Introduction the Internet of Things (IOT):

Presentation the IoT is a rising subject of monetary and specialized importance.

1.Medical care assumes a significant part in IoT, that diminishes trouble confronted patients and specialists. Homecare is given rather than costly clinical consideration along with counteraction is shown by proficient medical care administration. This assistance will help each person by following the fundamental medical care, which prompts more beneficial outcomes.

2.IOT innovation was expanding to help expense and nature of patient's lives along furthermore guarantees life range of patients with legitimate drug. In regular medical care undetected medical conditions can be tackled through this IoT Innovation along these lines guarantees medical services benefits by keeping up with advanced character for every tolerant difficulty can be significantly diminished.

3.This proposed paper shows dependable nonstop observing through specialist, arrangement of patients anyplace on planet dependent upon medical service checking framework will checked. Patients convey a bunch of body sensors to gather their body boundaries.

Existing system:

Medication alert system for patient is a wellbeing checking framework utilizing IOT depicts the assortment and interoperation of patient information gathered from the sensors from the medical clinics through IOT Innovation. The gathered sensor information will uphold the specialist in the crisis circumstance for the advancement and improvement of patient wellbeing. The equipment stage to carry out the task comprises of a sensor and Raspberry Pi 3 Model B prepared in a manner to speak with specialist through Web and PDA. This proposed thought will assist specialists with being familiar with the condition of patient wellbeing and screen anyplace on the planet. In this proposed thought the sensors assemble the clinical data of the patient that incorporates patient's pulse, circulatory strain, and heartbeat rate then, at that point, utilizing camera the patient is energetic observed through the Raspberry unit and this data is shipped off the Web and put away in a clinical server. The specialist and patient can screen the patient information from any spot of the world through the gave IP server address whenever. The crisis alert is shipped off the patient on the off chance that the sensor esteem is surpassed the limit information. In this manner, the patients' wellbeing boundaries are observed exuberant and standard checking through the clinical server to a specialist will assist with creating compelling determination and

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practically precise consideration can be given. The information assortment through the IOT will assist the patient with recuperating effectively and furthermore upgraded clinical consideration can be given to the patients with minimal expense.

Proposed system:

In the implemented system a new technique that which can monitor the patient condition very easily. This system has a medical chamber with time adjustment system. With the help of time management and motor setup we can open the medical chamber automatically. The monitoring information will be automatically uploaded to the cloud and the doctor can be monitored very easily by their access. The patient pulse and temperature are monitored automatically with the help of pulse oximeter. Pill taken information has been sent.

Conclusion:

In this chapter we discuss about the Introduction, Existing system, Proposed system, Algorithm.

II.LITERATURE REVIEW

As recently referenced, to respond to the introduced research questions, we chose to play out a writing study to plan the surviving information on this space. We decided to use the SLR method for collecting relevant primary studies and followed the guidelines given by Kitchen ham and Charters [9]. For the SLR, we decide to do an electronic search. We decided to use these simple keywords in order to receive good coverage of potential primary studies. The last inquiries were designated to watchwords and restricted uniquely to investigate papers. In the primary period of the exploration, we chose concentrates on dependent on abstracts. We utilized the accompanying consideration and rejection rules: Friend looked into concentrates on meeting and diary articles just as book segments written in English zeroing in on each of the three perspectives were incorporated.

We prohibited examinations written in dialects other than English, banners, digests, and short papers, just as concentrates just referencing the watchwords however not zeroing in on the issue. In the second period of the examination, the chose studies were perused cautiously. In this stage, we actually barred investigations except if they zeroed in on the improvement of sensor networks with Raspberry Pi. Eventually, we chose 15 essential examinations for incorporation in this review. The chose studies were perused and investigated. We concentrated on which advancements were utilized, what sorts of issues were confronted, how the testing was accounted for, and whether or not there were any issues in testing. At last, the notes were surveyed and the outcomes were dissected. In the leftover segments of this paper, we will initially introduce the chose key investigations in the segment altogether; we chose 15 important essential examinations for this paper. The essential examinations found and chose were [10-24].

The algorithm for the software was presented. The experiments comprised of usefulness tests where the equipment and programming were tried. The experimental outcomes showed that the perception distance was little, seven centimeters. Likewise, the dependability of the framework was tried. This test shows that 85% of framework warnings were genuine.

III.PROJECT OVERVIEW

BLOCK DAIGRAM

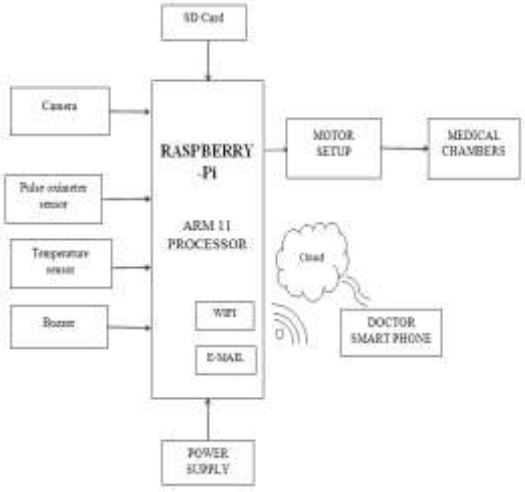

Fig 1:Impimentation of patient medication alert framework

The block diagram consists of Raspberry-pi 3b, Camera, medicine Boxes, Buzzer, servo motors, pulse oximeter sensor, temperature sensor.

In this we are implementing a new technique that which we can monitor the patient condition very easily. We are implementing a medical chamber with time adjustment system. With the help of time management and motor setup we can open the medical chamber automatically. The monitoring information will be automatically uploaded to the cloud and the doctor can be monitored very easily by their access. We are monitoring the patient pulse, temperature.

Flow chart:

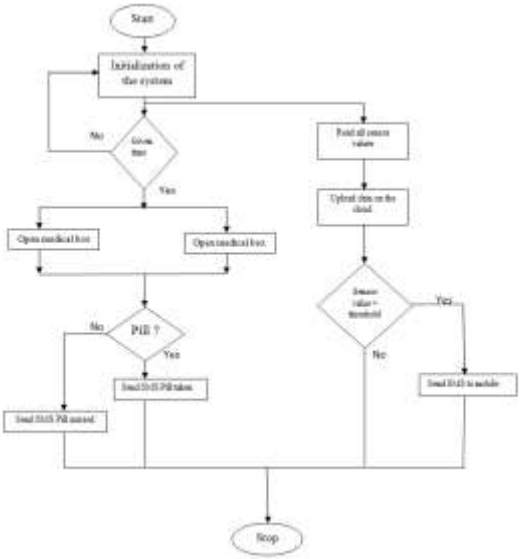

Figure 2: Flow chart of medication alert system

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The flow chart represents step by step procedure of the system it consists of various blocks as shown in the below figure. The first step is initialization of the system, in this we set the default timings and at a particular default time the system gets initialized and the medical box will open automatically and will give an alert to the patient so that the patient takes the medicine on time. If the patient takes the medicine, then SMS will be automatically generated as pill taken else SMS will be generated as pill missed if the patient does not take the medicine. This process will get repeated at every default time.

The other side of the blocks in the flowchart is regarding the patient's body temperature, pulse, heartbeat etc., when the patient places his thumb on the fingerprint sensor then the system initialized and all the sensors will be activated and read the values of the patient like body temperature, heartbeat of the patient and pulse of the patient and the data of the patient will be stored in the cloud every time. If the sensor generated vales of the patient are greater than the threshold values (the values which are set in the system) then automatically the mobile will get an SMS, if all generated readings are less than or equal to the threshold values then SMS will not be generates which indicates that the patient is in good condition.

IV.IMPLEMENTATION OF SOFTWARE AND HARDWARE

Architectural Implementation:

In this we are using the major components are Rasbarrypi-3b it is the heart of the system because it activates all the sensors which are connected to the board with the help of software. The main advantage of using this board is itself containing in built WI-FI and by using this we can perform multitasking operations with the help of kernel services we can increase the speed off operation. Pulse oximeter will be helpful here to get all the heart rate and oxygen levels of the patient. A servo motor can be fixed to organize the medical shelves. Temperature sensor will provide the temperature details according to the timing.

Raspberrypi-3b

Raspberry Pi Model 3b is a powerful license-card sized computer with single board, and is a 3rd generation board. So, it is faster then the 1stb generation by maintaining with more powerful processes of and with the popular board format. Bluetooth and lane connectivity makes this as a powerful design.

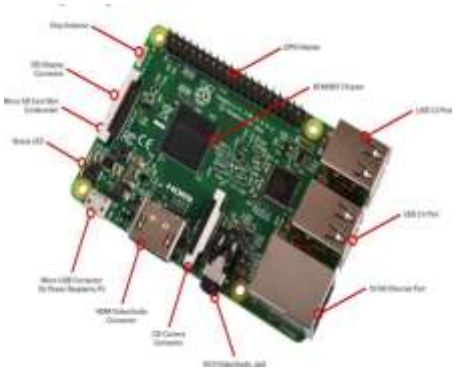

Figure 3: Raspberry-Pi 3b

Camera Module in raspberry-Pi

Camera in raspberry-Pi plug straightforwardly connected to CSI connector in raspberry-Pi. It is ready to convey a perfectly 5MP goal picture, or 1080p HD video recording at 30fps! Most recent Version 1.3! Hand crafted and fabricated includes a 5MP (2592?1944 pixels) Omni vision 5647 sensor in a decent center module.

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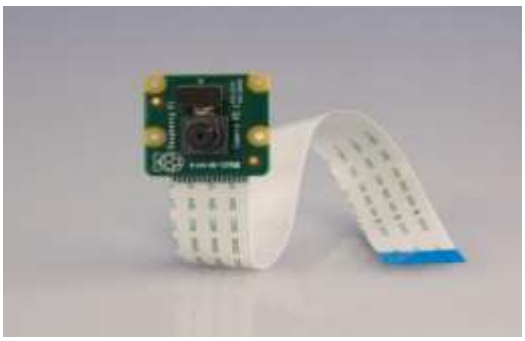

Figure 4: 5MP Raspberry pi camera module

Buzzer Module:

A Buzzer or beeper is an audio signaling tool, which might be mechanical, electromechanical or piezo-electric. Common employments of buzzers and beepers incorporate alarm devices, clocks and affirmation of client info, for example, a mouse click or keystroke.

Figure 5: Piezo electric buzzer

Heart rate and pulse oximetry monitor:

The MAXREFDES117# reference configuration is a low power, optical heart-rate module complete with incorporated red and IR LEDs, and a power supply. This small board, ideal for wearable projects, might be put on a finger to precisely distinguish heart rate. This flexible module works with both Arduino and mbed stages for fast testing, advancement and framework mix. An essential, open-

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source pulse and SPO2 calculation is remembered for the model firmware.

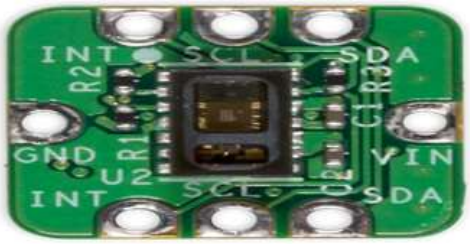

Figure 6: pulse oximeter sensor

Temperature humidity sensor module

This sensor gives a pre-adjusted advanced result. It measures exceptional humidity, and the temperature is estimated by a negative temperature coefficient thermistor. It has great unwavering quality and long-term stability. If it's not too much trouble, note that this sensor won't work for temperatures under 0 degree.

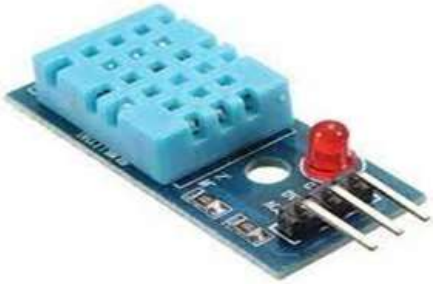

Figure 7: Temperature humidity sensor module

There are various kinds of temperature sensors accessible and they each utilization various innovations and standards to take the temperature estimation.

IR(Infrared) Proximity Sensor:

An IR sensor is an electronic device that performs IR signal scan in the specific frequency range defined by the standards and converts it to electric signals on its digital output pin (usually as a signal PIN as OUT PIN). Proximity sensors are used in touchscreen phones, in other devices. Display is disabled during the call so that even if the cheek is in touch with the touchscreen, it will not affect it.

Figure 8: IR proximity sensor

LiDAR proximity sensor:

LiDAR, in short for Light Detection and Ranging, is a higher-end sensing technology that provides excellent max detection range with fast update rates.

Servo Motor SG-90:

The servomotor is controlled with using of servomechanism. Assuming this device is controlled which is related to servo system in Direct Current Engine. At that point, this generally known Direct Current Servo Motor and in case the controlled device is worked by Alternative Current then this is called as AC Servo Motor.

Figure 9: Servo motor

V.RESULTS AND DISCUSSION

Results:

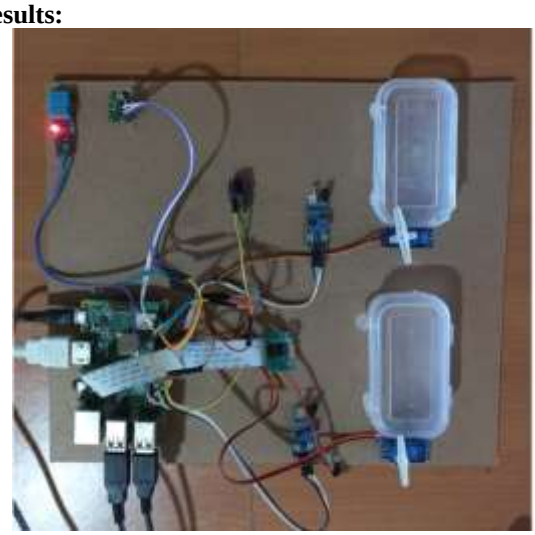

Figure 10: Hardware set up of Medication alert system for patient using Raspberry pi

The figure shows the hardware implementation of the system it consists of different components and sensors are connected like Buzzer, temperature sensor, IR sensor, pulse oximeter sensor, servo motor, camera etc.

All these are connected to ARM 11 processor and the pins used in the processor are first IR sensor is connected to GPIO 16 and, second IR sensor is connected to GPIO 12 and GPIO 5, temperature Sensor and pulse oximeter is connected to button for operating purpose. And is connected to GPIO 0 , Buzzer is connected to GPIO 13 and GPIO 27 for camera there is a inbuilt slot that is directly connected to USB Port.

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medical chambers are open/close with the help of Servo motors.

The controller set the correct time that when the patient needs to take the pill/tablet. The controller sets that activate the motor at the preferred time and makes the patient get altered with the help of buzzer. At the set time the chamber opens , patient will take the medicine. While taking medicine an image is captured, the IR sensor notifies to the controller through an SMS and image is send to the MAIL-ID.

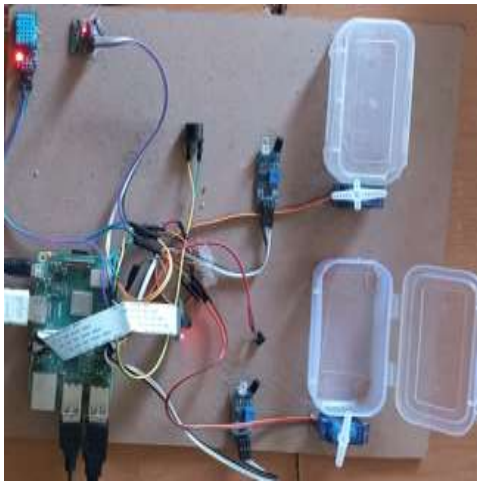

Figure 11: Medical slot open condition when PILLS TAKEN time up

This Device includes a box with different Components in order to help the patient to take the correct dose of medicine from the pill box. It is activated when the door opens in addition to this, the display monitor is used to show the information about patient, hour and dose that should be taken.

VI.CONCLUSION AND FUTURESCOPE

Conclusion:

- According to this system patient will have an easy way to remind their medication time with the dose of the medication.
- We are implementing a medical chamber with time adjustment system. With the help of time management and motor setup we can open the medical chamber automatically.
- While patient placed the finger on the sensors it collects the estimated values and stored on data sheet.

Future scope:

- By combining all these features, this can be a complete human security monitoring system.
- Wherever, data monitoring, remote sending and remote controlling is required, the same system is applicable directly with little modifications such as providing security without using internet, periodically taking the camera shots, by sending the voice message that can be very easy to solve issue.
- The entire system can be molded in a single wrist watch. Thus; such a system can be implemented using a low-cost computer like Raspberry Pi which can function like a mini computer.
- The latest advancements of technology and new boards coming every day, it apparent that all embedded applications and systems will be implemented as IOT application.

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