

Vaccine Recognition and Health Monitoring System

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Abstract: *The SARS-CoV-2 first surfaced in 2019 in China and later spread across the globe causing a pandemic. Immunization has thus far been considered to be mankind's weapon of choice in the frontline fight against the virus defined as Covid-19. Mass vaccination programs carried out by nations are closely related to public health information, data safety and data security. all the countries due to this pandemic including India, are fighting with COVID-19 situation and still looking for a cost-effective solution to face the problems arising in several ways. The current global challenge of corona pandemic has surpassed the provincial, radical, conceptual, social, spiritual and academic boundaries. Researchers in physical sciences and engineering are attempting to take such challenges, to grow new theories, to describe new study problems, to generate user-centred explanations, and to edify ourselves and the overall civilian. Due to this covid-19 for the precaution purpose we have to take two vaccinations compulsory. whenever we go outside in other areas, they check vaccinations are completed or not this is time consuming process. so we design system that shows vaccination is done or not and monitor health details like temperature, oxygen level and heartbeats. it reduces time consumption and also it reduces manual work.*

Keywords: Data Safety, Data Security, Consumption, Conceptual, Spiritual, Provincial, etc.

I. INTRODUCTION

Now a days due to covid pandemic situation we have to face different health issues. The corona virus disease is an infection disease cause by a new place cover corona virus which ssCOVID-19 affects different people in different ways. In today's world of engineering technology computers are playing a virtual role in every walk of life. The problem due to the vaccine details checking are overcome with the help of task being Manually. Maintenance of the checking like Body temperature, oxygen level, Heart beat it is difficult. Since this is a manual system there is always a probability that there is loss of data, resulting in less durability. As these issues are of major concern, we developed a system where in all the above factors are achieved.

As these issues are of major concern, we develop a Vaccine Recognition and health monitoring System where in all the above factors are achieved which provides a service to anyone to entering easily in anywhere where vaccine details and health details are checked. Vaccine and health monitoring system that could be used for entering, vaccine details checking and health updates using finger prints. It provides environment to maintain the person health details starting from finger prints, Vaccine details, Health updates. we develop a system to recognize the details of vaccine and daily health updates. We used fingerprint recognition technology for the identification of participants. This system is used to check vaccine details, body temperature, oxygen level, and blood pressure through finger print. If health details are normal then participant allowed entering anywhere.

II. REQUIRED COMPONENT

Hardware:

1. Raspberry pi-3 B+
2. MAX 30102 Sensor
3. DHT11
4. R305 Module

Software's:

1. Python
2. Raspbian
3. VNC (Virtual Network Computing) viewer

1. Raspberry pi-3 B+

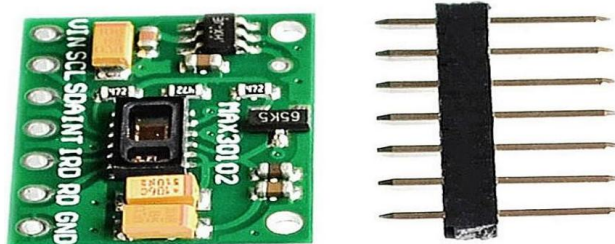


Raspberry pi-3 B+ is a credit card sized PC one of the most successful computers the UK has ever made. The raspberry pi comes with operating systems we can use, or we can manually install yourself. It has 40 GPIO pins. There is a set of connections that have varies functions.

Features

- 1GB LPDDR2 SDRAM
- Broadcom BCM2837B0 processor used in raspberry pi, Cortex-A53 (ARMv8) 64-bit SoC @ 1.4GHz
- Gigabit Ethernet over USB 2.0(maximum throughput 300 mbps)
- 2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN, Bluetooth range is 4.2, BLE
- Extended 40-pin GPIO header
- Full-size HDMI
- 4 USB 2.0 ports
- DSI display port for touchscreen display and it connects with a raspberry pi.
- CSI camera port is used to connecting a Raspberry Pi camera
- 4-pole stereo output and also it has composite video port
- 5V/2.5A DC power input
- Power-over-Ethernet (PoE) support
- Micro SD port is used for loading your operating system and storing data

2. MAX 30102 Sensor

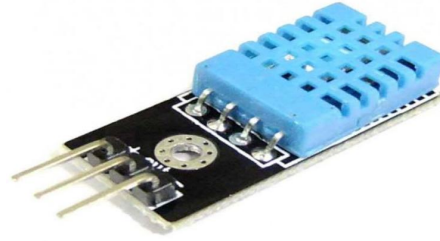


Maxim Integrated MAX30102 Sensor is a highly integrated pulse oximetry and heart-rate monitor or counting module. The MAX30102 includes photodetectors, internal LEDs, optical elements, and low-noise electronics with ambient light rejection. This device is highly sensitive operates on a single 1.8V power supply and a separate 5.0V power supply for the internal LEDs. Communication is through a standard I2C-compatible interface. This sensor can be shut down through software with zero standby current, allowing the power rails to remain powered at all times.

Features

- Tiny 5.6mm x 3.3mm x 1.55mm 14-pin optical module
- Heart-rate monitor and pulse oximeter sensor in an LED reflective solution
- Ultra-low power operation for mobile devices
- Integrated cover glass for optimal, robust performance
- Low-power heart rate monitor

3. DHT11



Temperature and humidity sensors are the most commonly used environment sensors. Humidity sensors are sometimes also referred to as hygrometers. These devices are used to provide the actual humidity condition within the air at any given point or in any given place and also it provides temperature condition within the air.

Features

- Operating current: 0.3mA (measuring) 60uA (standby)
- Operating Voltage: 3.5V to 5.5
- Temperature Range: 0°C to 50°C
- Output: Serial data
- Humidity Range: 20% to 90%
- Accuracy: $\pm 1^\circ\text{C}$ and $\pm 1\%$
- Resolution: Temperature and Humidity both are 16-bit

4. R305 Module



Fingerprint Module

TTL UART is a finger print sensor module with TTL UART interface. The user can store the finger print data in the module and can configure it in 1: Nor 1: 1 mode for identify the person. The finger print module can directly interface with 5v or 3v 3 Microcontroller. A level converter (like MAX232) is required for interfacing with PC

Features

- Baud rate (9600*N) bps, N=1-12 (default N=6 57600bps)
- Matching Mode: 1:1 and 1: N
- Image acquiring time:

- Character file size: 256 bytes
- Power DC: 3.6V-6.0V
- Interface: UART (TTL logical level)/ USB 1.1
- Working current: 100Ma
- Window dimension: 18mm*22mm
- Peak Current: 150mA
- Character file size: 256 bytes
- Image acquiring time: <0.5s
- Storage capacity: 256
- Template size: 512 bytes
- FRR: <0.1%
- FRR: <0.1%
- Average searching time: < 0.8s (1:880)
- Security level: 5 (1, 2, 3, 4, 5(highest))

1. Python programming language

Python is an object-oriented, high-level programming language, integrated with dynamic semantics. Its high-level built-in data structures, combined with dynamic binding and dynamic scripting, make it very easy for Application Development, as well as for use as a scripting to connect existing components together. Python's simple, easy to learn, syntax is also easy anyone can easily learn, emphasizes readability and therefore reduces the cost of program maintenance. Python supports packages and modules, which encourages code reuse and program modularity. The extensive standard library and python interpreter are available in source or binary form without charge for all major platforms, and can be freely distributed.

Programmers fall in love with Python because provide more productivity. this language is interpreted so there is no compilation step, the edit-test-debug cycle is incredibly fast. Debugging Python programs is easy: line by line execution occurs a bug or bad input will never cause a segmentation fault. Instead, when the interpreter discovers an error, it increases an exception. When the program does not grab the exception, the interpreter prints a stack trace. A source level debugger allows inspection of global and local variables, evaluation of setting breakpoints, arbitrary expressions, stepping through the code a line at a time, and so on. The debugger is written in Python itself, testifying to Python's self-examine power. On the other hand, often the easiest way to debug a program is to add a few print statements to the source code the fast execution cycle makes this simple approach very productive.

2. Raspbian

Raspbian is a Debian-based (32 bit) computer operating system for Raspberry Pi. There are several versions of Raspbian including Raspbian Buster and Raspbian Stretch. From 2015 it has become official operating system, from the Raspberry Pi Foundation as the primary operating system for the family of Raspberry Pi single-board computers. Raspbian was created by Mike Thompson and Peter Green as an independent project. The initial build was completed in June 2012. The operating system is still under active development. Raspbian is highly optimized for the Raspberry Pi line's low-performance ARM CPUs.

Raspbian uses PIXEL, Pi Improved X-Window Environment, Lightweight as its main desktop environment as of the latest update. It is composed of a modified LXDE desktop environment and the Openbox stacking window manager with a new theme and few other changes. The distribution is shipped with a copy of computer algebra program Mathematica and a version of Minecraft called Minecraft Pi as well as a lightweight version of Chromium as of the latest version.

3. VNC (Virtual Network Computing) viewer

It is not suitable to work directly on the Raspberry Pi. we can work on it from another device by remote control. VNC is a graphical desktop sharing system this system is allows you to remotely control the desktop interface of one computer (running VNC Server) from other devices like another computer or mobile device. VNC Viewer transmits the mouse and

either keyboards or touch events to VNC Server, and receives updates to the screen in return. You will see the mobile device or desktop of the Raspberry Pi inside a window on your computer. You will be able to control it as though you were working on the Raspberry Pi itself.

VNC Connect from Real VNC is included with Raspbian. It consists of both VNC Viewer, which allows you to control desktop computers remotely from your Raspberry Pi should you want to, through VNC Server, which allows you to control your Raspberry Pi remotely. VNC Server gives you remote access to the graphical desktop that is running on your Raspberry Pi, as though you were sitting in front of it. You must enable VNC Server before you can use it; instructions for this are given below. You can also use VNC Server to gain graphical remote access to your Raspberry Pi, if it is not running or headless a graphical desktop.

III. APPLICATIONS

1. For Colleges, School students/Teachers
2. For Bank & Offices staff

IV. OBJECTIVES

Safety is the most crucial concern of human. We always try to keep our things between ourselves. For this reason, we still use various methods to check our vaccination details and health details. And when it comes to our daily life, we are more serious. There are so many ways to check all details manually; one of them is check vaccine certificates—a system where you are the only one to know how to access it.

It saves our daily life from the various malicious problems. This system will give us the security that we want. To make our life more secure, we are going to build vaccine reorganization and health monitoring system. This system is easy to assemble and very easy to use in our daily life. Anyone can use it to secure themselves.

- Increase the security level to prevent an unauthorised participant.
- Give the flexibility to the admin to change or reset information in data base.
- Using finger print we can access the all details.

V. ADVANTAGES

- Provide strong protection against corona virus.
- It reduces manual work.
- Easy to check vaccination details and health updates for reducing time consumption.

VI. DISADVANTAGES

- Fingerprint sensor can be 15% less accurate.
- There is a limit in taking information of patients.

VII. CONCLUSION

The work was done successfully. In this project, it is easy to find out vaccine details and health updates in minimum time. Implementation impact on reducing COVID-19 situation and to check the health updates to improve immunity. It is helpful for low immunity patients to identify symptoms and provide better treatment rapidly.

REFERENCES

- [1] Allam Z., Jones D.S. On the coronavirus (COVID-19) outbreak and the smart city network: universal data sharing standards coupled with artificial intelligence (AI) to benefit urban health monitoring and management. *Healthcare*. 2020 Mar;8(No. 1):46. Multidisciplinary Digital Publishing Institute. [PMC free article] [PubMed] [Google Scholar].
- [2] Y. Dong, T. Dai, Y. Wei et al., "A systematic review of SARS-CoV-2 vaccine candidates", *Sig Transduct Target Ther*, vol. 5, pp. 237, 2020.