

AI based Health Care Any Time Machine for Rural Areas

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Abstract-People in rural areas often cannot get to hospitals in time for medication, so we implemented this project. It is also a low-cost system that is simple to operate and uses biometrics as input to show our health conditions on a mobile phone. By using biometrics as the input, we can save lives by providing emergency alerts at the appropriate times, and anyone, regardless of education level, can use this system with ease.

Keywords: ESP32 Microcontroller, LCD

1.INTRODUCTION

Over the past few decades, medical facilities have expanded significantly, but they are still exclusively found in large cities and towns—not in rural areas. India has a high death rate from a shortage of first aid supplies, particularly in rural areas. Currently, a lot of devices have been created for the public's convenience in order to supply medications, such as ATMs, but nothing is more effective overall. Medical kit vending machines are widely available, although they require a higher power consumption to operate. To process the input and produce the output through the motor mechanism, the main part of the system is the Arduino microcontroller. The goal of the automatic medication dispenser is to help rural residents get access to healthcare. These days, this kit will be powered by wifi. Since smartphones and the internet are ubiquitous, they can serve as a first aid kit in their immediate surroundings, increasing efficiency. Medication will be administered based on the user's condition, including a temperature, heart rate, and breathing level check. Medications are administered in a secure setting, such as giving the patient a set number of medications as needed. This system is more effective and ready to use, and it can be installed in public areas without a pharmacy nearby, such as train stations, bus stops, toll plazas, or theaters. It also includes an identical sensor option and an up-to-date report for the user, which boosts the security system. For their personnel to

maintain their health throughout their lives, even big companies required these kinds of vending machines. In addition to lowering human labor, this strategy advances the digitization of our nation.

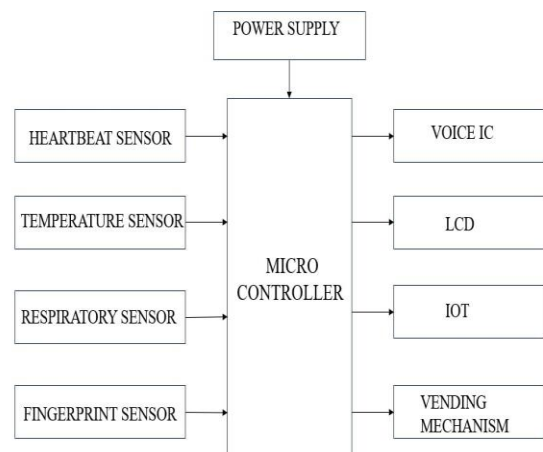
1.1 HARDWARE COMPONENTS:

- Power Supply
- Micro Controller
- Heart Beat Sensor
- Temperature Sensor
- Respiratory Sensor
- Voice IC
- IOT
- Fingerprint Sensor
- Vending Mechanism

1.2 SOFTWARE COMPONENTS:

- Embedded C
- Arduino

1.3 BLOCK DIAGRAM:



2.WORKING

The user can operate this equipment with ease. The power is supplied by an adaptor. An adapter is a device that changes the characteristics of one electrical system or device to another that would not otherwise work together. Liquid crystal display is referred to as LCD.

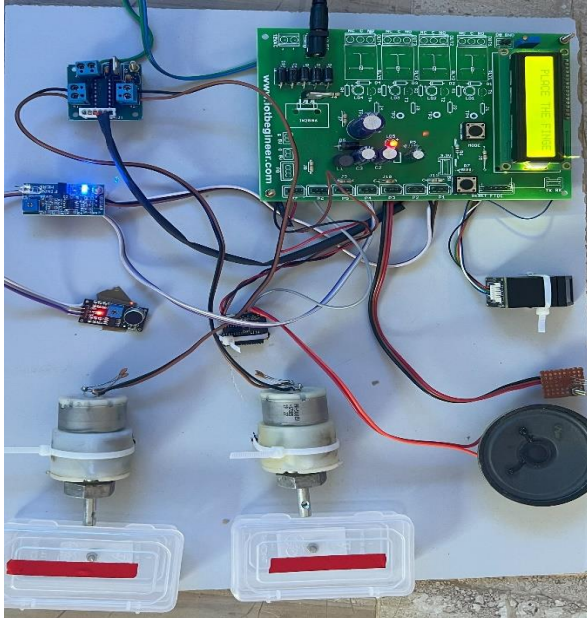


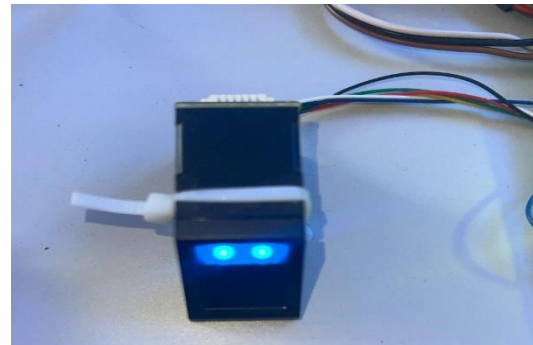
fig: CIRCUIT CONNECTION

The device can be connected to the majority of E-Block I/O ports thanks to its LCD display. The user manual that follows provides information on the serial format of data that is needed for the LCD display. A 5V power source is also needed for the display. Please be careful not to exceed 5V since this can harm the gadget. For those new to the world of microcontrollers and embedded systems, Arduino is an excellent starting platform. Many inexpensive sensors and modules allow you to create a variety of projects for personal or professional use. New project concepts and implementations emerged as technology developed; one such notion is the Internet of Things, or IoT. It is a networked platform where multiple "things" or gadgets are linked together via the internet to share data. While home automation and smart home applications are the primary emphasis of IOT projects in the do-it-yourself community, commercial and industrial IoT projects involve much more advanced implementations, such as machine learning, artificial intelligence, wireless sensor networks, etc. The key point to remember from this succinct introduction is that all Internet of Things projects, no matter how big or little, require Internet access. This is where devices like the

ESP8266 and ESP32 are useful. ESP8266 is a wonderful solution if you want to add Wi-Fi connectivity to your projects. However, the ESP32 is the best option if you want to design a whole system with Bluetooth, Wi-Fi, high resolution ADCs, DAC, serial communication, and many more capabilities. A low-cost System on Chip (SoC) microcontroller from Espressif Systems, the company behind the well-known ESP8266 SoC, is called the ESP32. It is a single-core and dual-core 32-bit Tensilica Xtensa LX6 Microprocessor with integrated Wi-Fi and Bluetooth that replaces the ESP8266 SoC. Like the ESP8266, the ESP32 has the advantage of having integrated RF components such as an RF balun, filters, an antenna switch, a low-noise receive amplifier, and a power amplifier. As a result, building hardware using the ESP32 is rather simple because very few external components are needed.

2.1 INITIALIZING FINGER

To assess someone's health, we must first initialize their finger in the device. For this process, we employ biometrics, and those who live in remote areas in particular need this initializing.



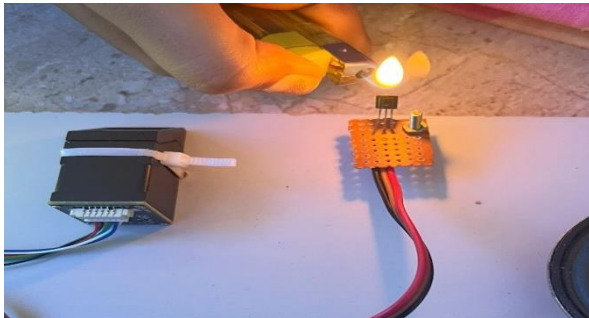
Finger methods are very helpful as they make it easy to identify people and verify them quickly. High-end smartphones can now be unlocked by fingerprint recognition because no two fingerprints are alike. This helps with monitoring people in critical areas. Biometrics in healthcare provides a way to access sensitive information using something that cannot be lost, stolen, or forgotten. Initializing finger methods detect a person's finger and provide an ID for that individual. An LCD will sense the results.



2.2 CHECKING DATA

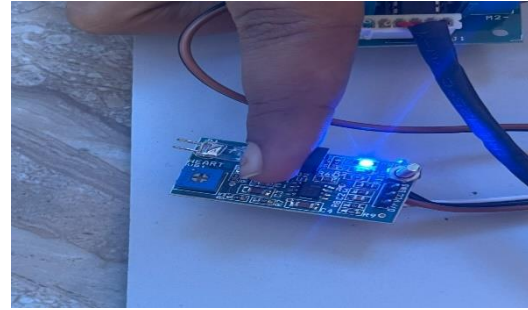
The IoT website will display the data gathered by the different sensors. Understanding a person's health status might be helpful.

1. TEMPERATURE SENSOR: The output voltage of the precision integrated-circuit temperature sensors in the LM35 series is linearly proportional to the temperature in centigrade. One advantage of the LM35 device over linear temperature sensors calibrated in Kelvin is that it may be conveniently scaled in centigrade without requiring the user to deduct a huge constant voltage from the output. The LM35 device can achieve typical accuracy levels of $\pm 1/4^{\circ}\text{C}$ at room temperature and $\pm 3/4^{\circ}\text{C}$ over the whole temperature range of -55°C to 150°C without the need for external calibration or trimming. The LM35 device's low output impedance, linear output, and accurate intrinsic calibration make it particularly simple to interface with readout or control circuitry.



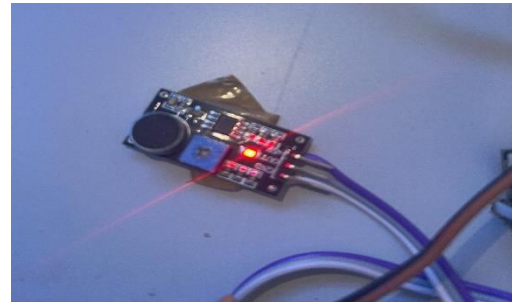
2.HEARTBEAT SENSOR:

When a finger is placed on the HEART BEAT sensor, it is intended to provide a digital readout of the heart beat. The beat LED glows in time with each heartbeat when the heart beat detector is operational. To measure the Beats Per Minute (BPM) rate, a microcontroller can be directly attached to this digital output. It operates on the basis of the finger's blood flow modulating light with each pulse.



3.RESPIRATORY SENSOR

The Respiration Sensor is utilized in biofeedback applications like stress management and relaxation training to track theoretical or abdominal breathing. This sensor not only measures breathing frequency, but it also indicates the relative depth of breathing. Although we recommend that there only be one or two layers of clothing between the sensor and the skin for optimal results, the Respiration Sensor for Nexus can be worn over clothing. The primary portion of the respiration sensor is often positioned in the abdominal region, directly above the navel. It is important to position the sensor so that there is no loss of tension.



2.3 WORKING PROTOTYPE

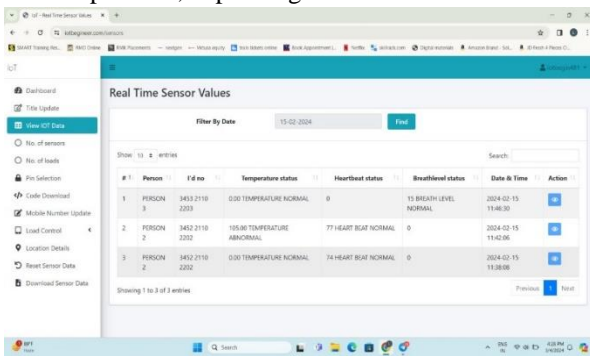




fig : FRONT VIEW AND LATERALVIEW OF WORKING PROTOTYPE

3.RESULTS AND DISSCUSION

Our proposed solution uses an IOT-enabled anytime health care device to upload data to neighboring hospitals in the event of a late-night emergency in villages. Here, we are identifying the individual details using a fingerprint sensor. They can examine the temperature, heart rate, and respiratory parameters using the appropriate sensor once the details have been identified. The microcontroller gathers all of the sensor data and uses it to update the body parameter values on the server. In the medical field, automatic technology does not exist. We visit hospitals when we have health problems and wait to speak with doctors before receiving advice from them. Even with minor issues, appointments with doctors take longer. Additionally, the information will be shown on the LCD for easy reference. Following data analysis, the vending machine will deliver the basic tablets, and a voice message will instruct the user to see a doctor as soon as possible, depending on their health.



4.CONCLUSION

Since health care services play a significant role in our society, automating these functions relieves human workload and facilitates measurement. Patients are also more likely to trust this approach because of its transparency. When a patient's condition is continuously

monitored, a doctor may assess the patient's current state and make an informed decision on the best course of therapy.

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