



IOT-WEARABLE YOGA AND EXERCISE DEVICE WITH CHILLER JACKET

Savitha M M¹, Gagana N V², Chaithanya M N³, Chandana G⁴

Assistant.Prof, Department of Electronics and communication SJC Institute of Technology, Chikkaballapur, India¹

Student, Department of Electronics and communication, SJC Institute of Technology, Chikkaballapur, India²⁻⁴

Abstract: To bridge the time between the patient's routine and their regular doctor, a project has been created. Here, sensors are used to read and record the regular parameters that a doctor must keep track of. Here, we're saving ourselves the time that would have been required for a routine checkup. This device is more effective at supplying the necessary detailed data, which can be evaluated in a matter of minutes. This technology also allows automatically adjusting body temperature, which benefits those in need like troops, the elderly, etc. Because elderly individuals and patients typically require assistance with every movement due to a lack of energy, this project includes notifications for any unusual patient falling.

Keywords: Renesas, Microcontroller, accelerometer, buzzer.

I. INTRODUCTION

The embedded health monitoring measures changes in health depending on each patient's unique health status. This approach uses an embedded sensor network and allows for remote patient monitoring. It is extremely beneficial for both patients and hospitals. To track behaviour and activity patterns in order to track changes in the patient's health, a sensor that is integrated into the environment is utilised.

Body temperature, respiratory activity, and patient movements are just a few examples of the human features that a patient monitoring system may measure, show, and record. Due to its cutting-edge technology, patient monitoring systems are one of the primary advancements. A patient monitoring system that offers continuous observation of a data acquisition and daily activities. Having a patient monitoring system is what its goal is. biological functions. By monitoring hand using sensor during exercise, position of hand is checked and updated to cloud. During a consultation, a doctor can quickly determine whether a workout is appropriate. The same sensor can be used to detect a patient falling, and an alert is then delivered. Within the Amazon cloud server, a graph is created.

The project's webpage includes a link to this graph. Any patient or doctor can study the graph and comprehend the patient's workout conduct. As a result, the doctor and patient have brief conversations. The patient can readily understand the instructions from the doctor and analyse the graph. Peltier is a device that controls body temperature. Peltier may produce both warmth and coldness, hence it is switched based on the ambient temperature. The wearable jackets will contain this gadget. This provides an immediate buzzer alarm alert so that the patient's surroundings can provide support. The carer or family doctor receives an SMS alert so they can contact the patient for additional assistance.

II. METHODOLOGY

There are several procedures and factors to take into account while creating a wearable yoga and workout gadget that includes a cooler jacket. Here is a recommended design process for such a device:

Determine the intended audience and goal: Find out which specific user group the item is designed for. Are yoga practitioners, athletes, or general fitness fans your target audience? Define the device's function, such as comfort during exercise or performance enhancement.

Define the attributes and capabilities: Make a list of the chiller jacket's and wearable device's mandatory features. Consider features like heart rate monitoring, movement tracking, posture correction, guided workouts, or auditory feedback for the wearable device.



Analyse current wearable technology and market- available chiller jackets as part of your market research. Examine their advantages, disadvantages, and customer reviews. Determine any market voids your product can address or potential areas for improvement.

III. BLOCK DIAGRAM OF PROPOSED MODEL

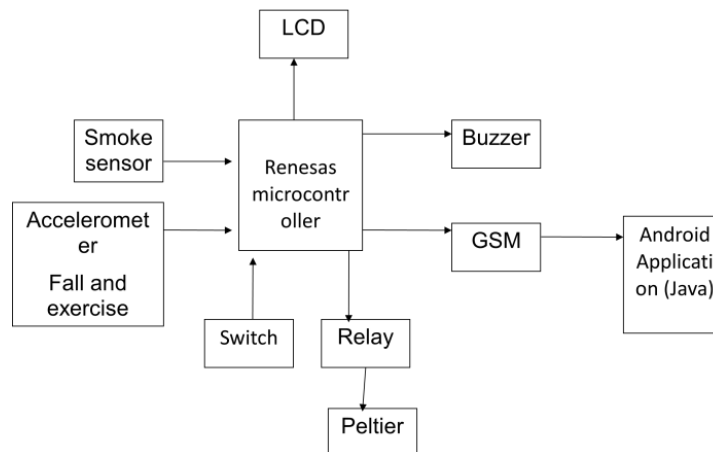


Figure 1: Basic Block Diagram of Yoga And Exercise Device WithChiller Jacket

According to their functions and utilities, several embedded systems in this figure 1 have designs that are noticeably distinct. The Renesas microcontroller at the middle of the block diagram serves as the project's central controlling element. A programme that aids the microcontroller in acting based on inputs provided by the output of the sensors is embedded within the microcontroller. The Renesas microcontroller is the project's brains. Renesas R5F100LE microcontroller, LCD, GSM, and sensors (LM35 temperature sensor) are the main components of this project. Many embedded systems have significantly varied designs depending on their tasks and utilities. The Renesas microcontroller at the middle of the block diagram serves as the project's central controlling element. The microcontroller has a programme built within it that enables it to take.

IV. COMPONENTS USED FOR HARDWAREARE

1. GSM module: The GSM communication module employs a mobile sim for usage in communication. enables users to receive/send SMS and mobile

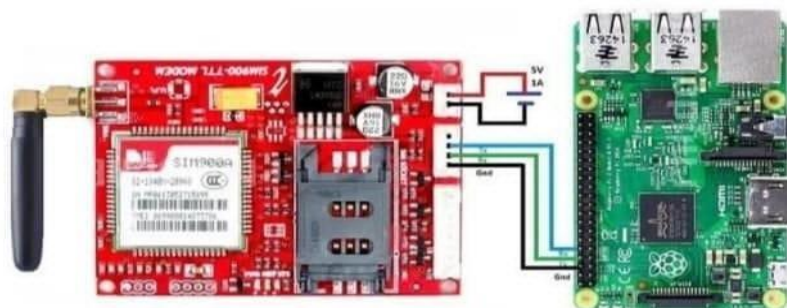


Fig.2Gsm Module

2. Buzzer: Simply said, a "buzzer" is a little speaker that you can connect to an Arduino with. When electricity is applied to particular crystals, a phenomena known as "buzzer electricity" occurs where the crystals' form changes. The crystal may produce sound by applying an electric signal with the proper



Fig 3:Buzzer

3. Smoke sensor: The MQ-2 gas sensor's structure and configuration are depicted in Fig. (Configuration A or B). The sensor is made up of a micro AL₂O₃ ceramic tube, a sensitive layer for tin dioxide (SnO₂), a measuring electrode, and a heater that are all placed into a crust that is made of plastic and stainless steel net. The heater offers the ideal working environment for delicate components. Four of the six pins on the wrapped MQ-2 are used to retrieve signals, and the remaining two are utilised to supply heating current.



Fig.4:Smoke Sensor

4. LCD: The way a pixel is controlled varies depending on the type of display; pixel control differs for CRT, LED, LCD, and newer forms of displays.

Briefly put, LCDs are illuminated by a backlight, and pixels are electronically turned on and off while rotating polarised light using liquid crystals. Each pixel has a polarising glass filter in front and behind it; the front filter is angled at a 90-degree angle. The electronically switchable liquid crystals are sandwiched between the two filters.



Fig 5:LCD

RESULT:

Definition of the issue with our underlying technology, which essentially helps doctors keep track of their patients' health indicators and produce correct results. The doctors digitally link to the patients through a website while continuously monitoring the health parameters of ICU patients from any location. Additionally, this technology allows for the measurement of parameter values in real time, making it useful for both clinics and hospitals. The doctor can efficiently calculate temperature, ECG, and heart rate measurements with the help of this system, which also allows the doctor to temporarily store data on a Raspberry Pi. The values are displayed on display and online in the following formats: temperature in degrees Celsius, heart rate in pulses, and ECG in %. Any threshold value will fluctuate when compared to the stated value.



CONCLUSION

Automating these services lessens the stress on humans and facilitates the measurement process because health care services are a crucial component of our society. Patients are more likely to trust this approach because of its transparency. When the threshold value is reached, the buzzer and LED alarm system warnsthe doctor, allowing him to take action more swiftly. By lowering doctor visits, hospital stays, and diagnostic testing procedures, monitoring systems are designed to lower health care expenditures. The server updates the patient data on the website with the use of GSM technology. Our system can yet be enhanced significantly to make it better and more flexible, for as by using more sophisticated sensors. The patient's saved and made public biometric informationhumidity sensors, fertility check sensors, etc.

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