Emerging Trends in Digital Transformation

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WEARABLE SMART DEVICE FOR WOMEN SAFETY FOR IOT

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ABSTRACT: Over the last few decades, a lot of effort and resources have been devoted to getting more women employed and remaining with organizations in all industries. In recent years, tales of women being sexually harassed at work and elsewhere have raised concerns about the specific effects of such discrimination on women. Because of how quickly things have evolved in the current era, we believe that technology may assist alleviate many of the issues that women face. As part of this effort, we demonstrated a model that employs GPS, a protocol for transmitting messages to mobile devices, the internet of things, and biological instruments to construct the prototype. After obtaining information from the pulse sensor, the computer monitors the person in question. Depending on the manufacturer's delay, the patient may experience significant shock if there is a malformation. Their family will be informed of their current whereabouts. It's feasible that this new recommendation method will make a significant difference in the challenges women encounter. Our method may indicate that there has been a significant decline in sexual harassment claims.

Keywords: *Internet of Things, Microcontroller, Harassment*

1.INTRODUCTION

Wearable sensor research and application have increased dramatically in recent years. The steady reduction in both size and cost of these items has allowed them to be used in a wide range of scenarios, making them intriguing. Wearable sensors could be used to monitor the elderly, track sports and physical activities, conduct surveillance, improve human-computer interaction, and aid in rehabilitation.

Wearable sensors can be employed in a variety of ways in this context, ranging from basic use as an alarm button to continuous monitoring of physiological data. A variety of tracking jobs have found wireless sensor networks (WSNs) to be an effective solution. Some of these applications include environmental monitoring and structural health assessments of buildings.

We discussed how integrated technology and the internet of things could be combined to create a system that assists women with their difficulties. WE-Safe is an Internet of Things (IoT) network that is ideally suited for safety-related sensor node applications. The WE-Safe program's purpose is to alert workers in harsh and hazardous environments when they enter an area that they are not permitted to be in. This Internet of Things tool will allow for new ways to save lives, prevent diseases, and do other wonderful things.

A similar concept may be used to always keep an eye on women and protect them against harassment. Checking a woman's pulse can reveal when her mood changes. The heart-beat sensor provides information on sensing technologies and algorithm development for PPGs worn on the wrist, making it easier to forecast critical characteristics for crucial applications. When utilized properly, wearable PPG monitors have the potential to revolutionize the way people move, opening up new avenues for study and development.

A light source is placed on the skin, and the amount of light reflected or transmitted through it is measured. This explains how pulse oximetry works. The various PPG signals are created by varied quantities of blood flowing through the arteries. Many factors can influence the intensity of the fluctuations, including the color of the skin, the amount of light in the room, the wavelength of light used to illuminate the blood, and the blood's ability to absorb light. When used as a heart rate monitor, the frequency indicates how quickly or slowly the heart beats. Both fitness and cardiovascular disease monitoring can benefit from considering human resources as an intervention technique.

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FIG 1: NETWORK DIAGRAM OF PROPOSED MODEL

As a result, a prototype for recognizing human behavior via the internet of things is developed. Here's an outline of the parts that will be covered in the essay:

2.ARCHITECTURE AND IMPLEMENTATION

Figure 1 shows that a flowchart of the technique created from the paper prototype is currently presented. To activate the gadget, simply click the "emergency" button. When this gadget is activated, it sends an emergency signal along with its particular position to the pre-programmed phone numbers for the police . This signal will also contain the specific position of the gadget.The prototype consists of several components. These include an ATMEGA 2560 Arduino, a GSM module, a location-accessing protocol, an Internet of Things module, a bell, a heart-beat sensor, a neurostimulator, an SOS button, a zig-bee module, and a heart-beat sensor. This microcontroller board, often known as the Arduino Mega 2560, is based on the ATmega2560-group specification.

It includes a sixteen megahertz crystal oscillator, fourteen universal asynchronous receivers (UARTs), sixteen analog inputs, fifty-four digital input/output pins (15 of which can generate pulse width modulation (PWM) outputs), a power port, an ICSP header, and a USB entry point. It also features a USB entry point. Before you can use it as a microcontroller, you must charge it with a computer, an AC-to-DC adapter, or a USB cable. You can charge it in one of three ways. It contains all of the necessary components. The Mega 2560 board is compatible with a wide range of shields originally designed for the Uno, previous versions of the Duemilanove, and Diecimilaboards .

These shields were initially designed for several boards. When it comes to developing the program for the AT Mega Controller, a work flow technique is used. In each case, the program covers a vast geographic area. The first circumstance occurs when the SOS button is pressed, and the second occurs when the heartbeat monitor detects an unusual signal or input and continues to operate outside of its normal range of operation. Both of these illnesses are considered life-threatening. A woman's heart rate rises dramatically as a result of the anomaly, indicating that she is in immediate danger.

The irregularity results in the activation of the SOS button. The heartbeat monitor uses a phototransistor and a bright infrared (IR) LED to detect pulses in the fingertips. This is done by using a heartbeat monitor. When the SOS button is pressed, the neurostimulator is activated. This occurs very rapidly once the button is pressed. Because to technology advancements, neurologists may now assist patients suffering from a variety of disorders, including Parkinson's disease, epilepsy, depression, and chronic pain. These stimulants have historically only had one mode of action. The pulse delivered to the patient stayed consistent and did not alter while they moved around. The neurological system received the pulse that was transmitted to it. Each of these devices can deliver electric stings to the person who is attacking.

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The person in charge of making the tools determines how much power is granted to each individual. There are currently a large variety of sound warning systems available for use. Communication devices include buzzers, beepers, and other electromechanical devices. This gadget will notify everyone who is close to the patient if the patient's condition deteriorates significantly. Following then, the GPS device is responsible for monitoring everything that occurs without interference from other devices. Using these minuscule technologies, you can now obtain real-time information about your location and time from almost anywhere on the planet, regardless of where you are. Since the late 1970s, a considerable number of GPS satellites have been launched into orbit. Furthermore, each of these spacecraft is outfitted with a highly accurate atomic clock. This project is currently active and in development. Satellites transmit data to Earth at predetermined intervals using predetermined radio frequencies.

In addition to compact central processing units and antennae, our miniature GPS systems use satellite data to quickly establish your location and time . The Global Positioning System (GPS) uses a huge network of satellites and ground stations to identify your exact location and current time. This enables the GPS to detect your location and time, regardless of where you are on the earth. The Global Positioning System (GPS) module may acquire information on the height of every visible satellite, as well as the current time. The GPS receiver may utilize this information to calculate the distance between all of the stars visible to the human eye. If the GPS receiver's antenna can observe at least four satellites during its operation, it will be able to accurately estimate both its location and time.

The words "seal" and "fix" are frequently used to refer to this issue.It's the number six. Regardless, the prototype's location is monitored and recorded, and the cloud connected to the Internet of Things is notified of the consequences. Modules are modular electrical devices that may be connected to a wide range of goods, including machinery and products, in order to power the Internet of Things (IoT). Modules can also be utilized to power specific devices. Devices with certain features can communicate data across wireless networks. This system component is responsible for creating wireless connections between almost anything and a router. Modules for the Internet of Things (IoT) provide a number of wireless protocols as well as other features. These features may have an impact on the functionality of Internet of Things apps. The capacity to maintain a continuous connection is the most distinctive feature of IoT modules.

When it comes to cloud storage, it is critical to ensure that data is always up to current . When there is a change in the Hostringer cloud, a GSM message is sent to the victim's three close pals. This message will include the most recent information collected from the location-accessing module. GSM or GPRS modules are circuits or microprocessors that connect a phone or computer to a GSM or GPRS network. This allows your phone or computer to connect to the network. In the final seconds before the woman takes her last breath, her thoughts turn to those she loves about, including her friends and family.

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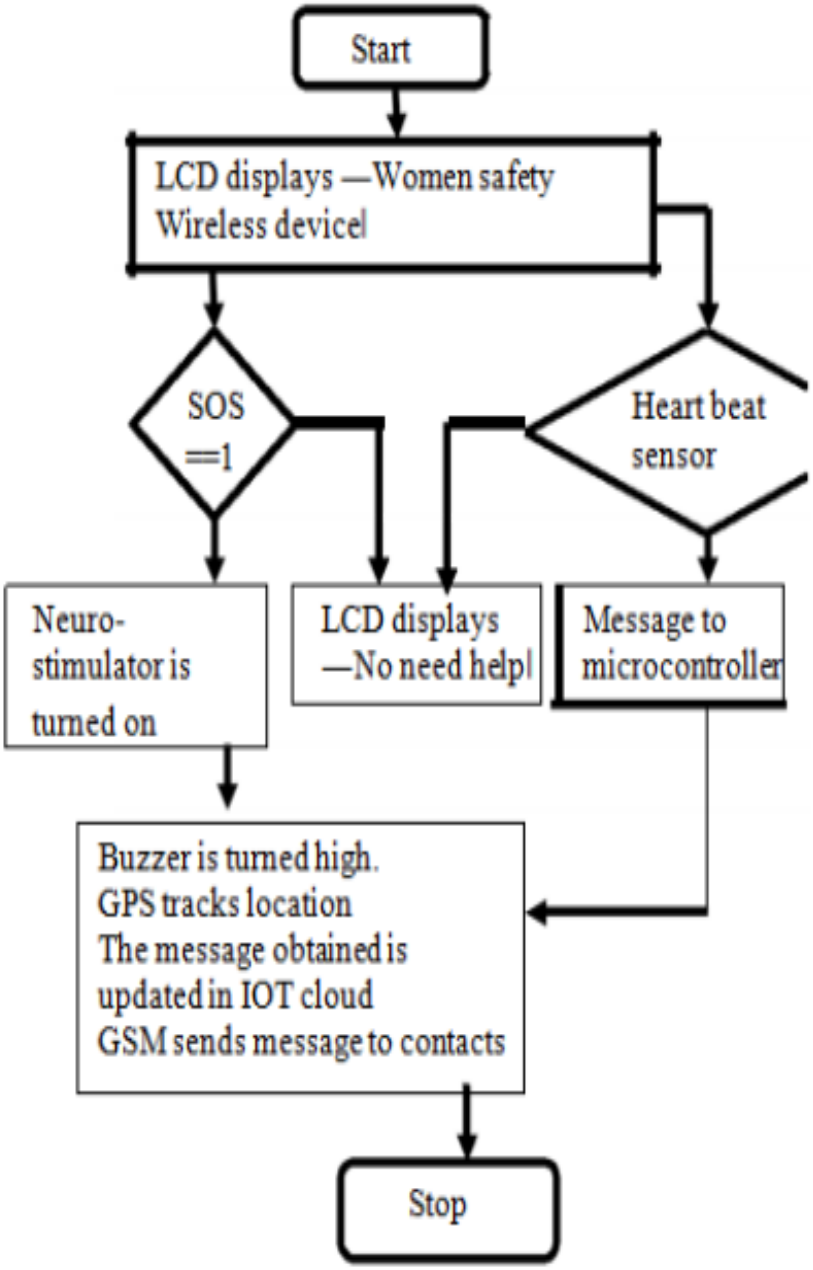

fig2:workflow oftheprototype

3. EXPERIMENTATION RESULT

The results were assessed and analyzed using the pre-existing framework. The following images show the results of various experiments performed on the prototype.

The message was received by the two connections at the top, as illustrated in Figure 5. Figure 4: As soon as the woman activates the module, the IoT cloud Hostringer begins to monitor her heart rate.Figure 3 shows how the computer's monitoring component use a separate program known as Tera term. In addition, this program tracks the women's current location and records their pulse rates. Current situation Installing and using the KAVALAN application on your mobile device is possible. It was built by the Tamil Nadu Government. These mobile gadgets may have GPS and text messaging capabilities.

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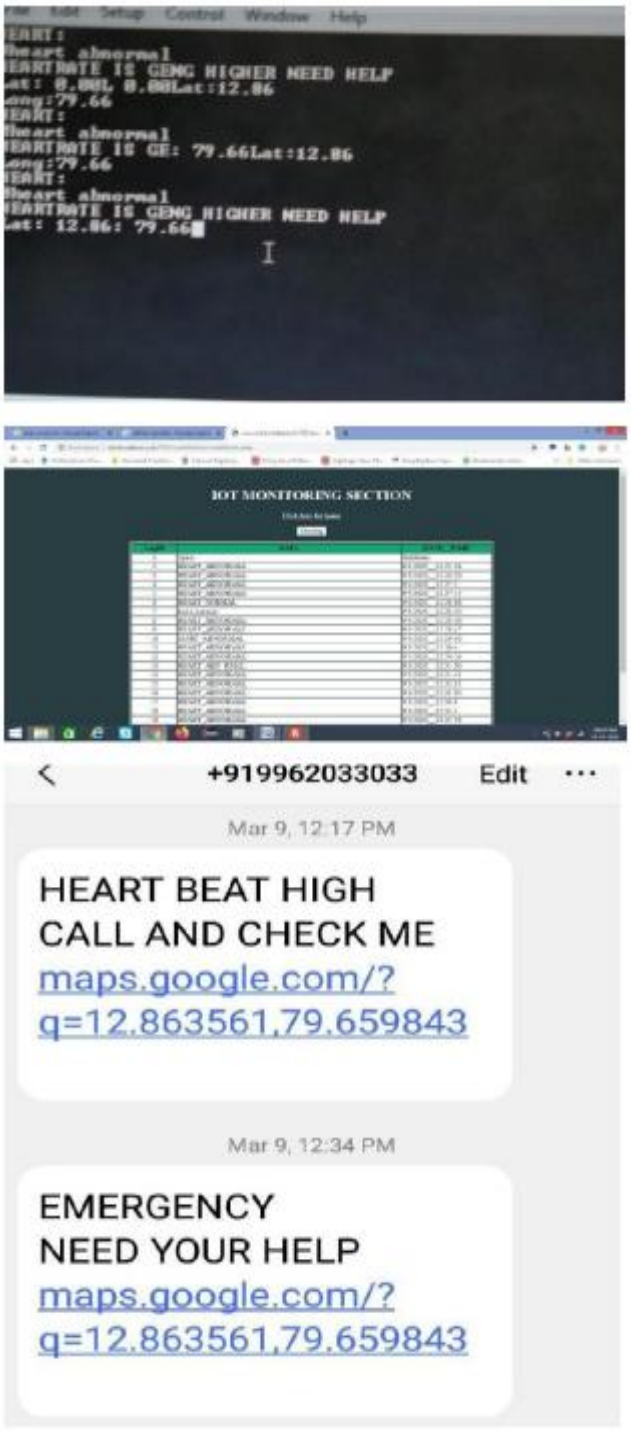

Fig3: Teraterm application,
Fig4: IOT Monitoring Section,
Fig5: Mobile Phone

These applications will safeguard women's safety in an emergency.The acronym "SOS," which previously stood for "Save Our Ship," is being renamed "Save Our Soul."This icon depicts the current condition of things in locations with water. The SOS symbol allows for the immediate broadcast of a bespoke message via the device's location alert application. In an emergency, the existing system is ineffective because the SOS button must be manually depressed. It is advised that the GPS, GSM, and SOS buttons be activated with the women's pulse rates.

A neurostimulator is also engaged, which delivers a temporary electric discharge to the offender, causing him to

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fall asleep. A production-level answer is an effective way to discover potential faults or errors before they emerge during the production phase. Creating a working prototype, which acts as a miniature version of the final product, can be valuable throughout the product's life cycle. Some users have complained about the app's requirement to access sensitive data on their devices, while others have had difficulty accessing and using the services.

We need the email addresses and phone numbers of people you know in order to communicate with them.Social worker A.S. Fathima Muzaffer commented, "I have no problem with others knowing where my phone is or who is calling." When an individual's storage, media files, contacts, and audio recordings are made public, it appears that their privacy has been invaded. "It will not be possible to use the app at all without providing such access," the official claimed.A third party stores the data, according to a technologist who works on the application's server, which is insecure for the user's privacy.

According to AMTEX Director Shahnawaz Khan, "When invoking privacy, we cannot exceed a certain limit." Khan supervises the application's software and call center services. Simply possessing the necessary information is enough to assure individual safety. This information is kept on a very secure computer. Facebook and Instagram appear to have gained increasingly popular in recent years.

When it comes to safety, there is a greater need for collaboration.[8] Within the authorized range, the prototype is easily accessible in urban areas with sufficient signal strength. Its utility is limited in locations with low signal strength. Thus, rural women may finally rest well, knowing that it is possible to improve signal strength for use in manufacturing. Additionally, nanotechnology can be used to make the model portable and useful, as well as to allow for quick modifications in high-traffic locations.It is still tough to update an IoT cloud when a road range is necessary. These flaws will become more noticeable as the prototype improves.

4.CONCLUSION

Every component built into the microcontroller works in combination with a C software stored on it. In the event of an emergency, the GPS launches a signal search through either its internal or external antenna. When it detects the signal, it sends brief texts to the individual's three most important contacts over the GSM network. When the "SOS" (save our lives) icon is depressed, the necessary information is sent to neighboring public service stations. The heart beat sensor determines the pulse rate by observing blood flow through the wrist. This is achievable via receiving the sensor's infrared frequency. An external neurostimulator sends a high-frequency electrical discharge to the enemy, causing unconsciousness. Workers will be warned to potentially hazardous and difficult working conditions before leaving specified safe zones by using a smart peripheral device related with the women's safety initiative. This type of Internet of Things application will help to prevent diseases, save lives, and complete other beneficial duties. The subsequent research will mostly focus on the results of the trials and the operation of the Hostringer network.

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