An IoT Based Women's Safety Device

Harirama Prashath R[1], Karthick R R[2], Mothikaa M G[3], Priyanka G[4]
[1, 2, 3, 4] Dept of Computer Science and Engineering
[1, 2, 3, 4] Dr. NGP Institute of Technology, Coimbatore.

Abstract- *Nowadays, the protection of women and children is a significant concern in our culture. The number of victims is growing every day. We propose a model in this paper that will help to ensure the protection of women and children around the world. For sensing heartbeat, temperature, and rapid changes in the motion of the user, we used various sensors such as a heartbeat sensor, temperature sensor, and accelerometer sensor. We also used GPS to assist in determining the device's location. The model's GSM sends emergency messages to guardians, family, and the police station. We have presented an IoT (internet of things)-the based gadget that will assist in continuously monitoring values from various sensors and GPS employed in the device.*

Keywords- Women Safety, Sensor, Internet of Things (IoT), Smart Device.

I. INTRODUCTION

Women are competing with men in every aspect of society at the moment. Women contribute 50% to the growth of our country. Women, on the other hand, are afraid of being harassed and killed. All of these forms of female harassment allegations are on the rise. As a result, ensuring the protection of women is critical. The proposed band concept in this research will provide the necessary safety for women to work late at night. The proposed model includes a number of sensors that will continuously measure various characteristics. The internet of things (IoT) is a novel and rapidly evolving concept. Guardians, families, and police can monitor and track the value and location of various sensors utilizing IoT-based technologies. Wearable devices are convenient to transport. This can be accomplished by using an Arduino device that continuously monitors and stores all sensor readings in its non-volatile memory. This device continuously records the readings, and the consumer can request that the live meter reading be shown on a webpage.

II. MODULES DESCRIPTION

A module is a program component or portion that contains one or more routines. A program is made up of one or more independently built modules. The project "AN IOT BASED WOMEN'S SAFETY DEVICE" is divided into two parts: Hardware and Software.

HARDWARE

1. ARDUINO UNO

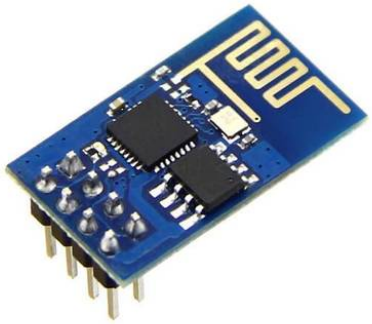
The Arduino UNO is the microcontroller utilized in this project. The Arduino UNO is a microcontroller board based on the ATMEGA 328P microcontroller. For storing code, the ATMEGA 328P contains 32kB of flash memory. 14 digital input and output pins, 6 analog inputs, a 16 MHz quartz crystal, USB, an ICSP circuit, and a reset button are included on the board. The Arduino software can be used to program the UNO.

2. SENSORS

A sensor is a device, module, machine, or subsystem that detects events or changes in its surroundings using a transducer and sends the information to other electronics, most commonly a microcontroller. Sensors are always used in combination with other electronics.

3. ESP8266 WIFI

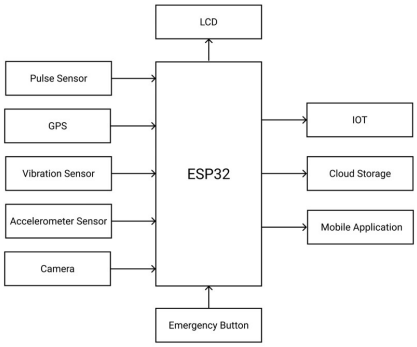
The ESP8266 Arduino compatible module is a low-cost Wi-Fi chip with complete TCP/IP capability, and the remarkable part is that it also has an MCU (Micro Controller Unit) that allows you to control I/O digital pins using simple pseudo-code like a programming language. Espressif Systems, a Shanghai-based Chinese firm, created this device.



4. GPS

The Global Positioning System, or GPS, is a satellite navigation system that provides users with location and time information under all weather circumstances. Planes, ships, vehicles, and trucks all use GPS for navigation. Military and private users all across the world can benefit from the system. GPS enables continuous 3-dimensional positioning, navigation, and timing in real-time across the world.

BLOCK DIAGRAM



SOFTWARE SIDE

1. COLLECT

SEND SENSOR DATA PRIVATELY TO THE CLOUD.

Sensors are everywhere: in our homes, smartphones, autos, civic infrastructure, and industrial machinery. Sensors detect and record data from a wide range of sources. They also convey the information in some form, such as a numerical number or an electrical signal.

WHY WOULD YOU WANT TO COLLECT DATA IN THINGSPEAK?

Sensors, or things, sense data and typically act locally. ThingSpeak enables sensors, instruments, and websites to send data to the cloud where it is stored in either a private or a public channel. ThingSpeak stores data in private channels by default, but public channels can be used to share data with others. Once data is in a ThingSpeak channel, you can analyze and visualize it, calculate new data, or interact with social media, web services, and other devices.

ANALYZE AND VISUALIZE YOUR DATA WITH MATLAB

Data stored in the cloud is accessible from anywhere. You can study and visualize data using online analytical tools. In data, you can find links, patterns, and trends. You can make new calculations. Plots, charts, and gauges can help you visualize it.

WHY WOULD YOU WANT TO ANALYZE AND VISUALIZE DATA IN THINGSPEAK?

Thingspeak gives you access to Matlab to aid in data analysis. You have the ability to convert, mix, and calculate new data. Calculations can be scheduled to run at specific times. Visualize data linkages with the built-in charting tools. Combine data from numerous sources to build more sophisticated research.

2. ACT

TRIGGER A REACTION.

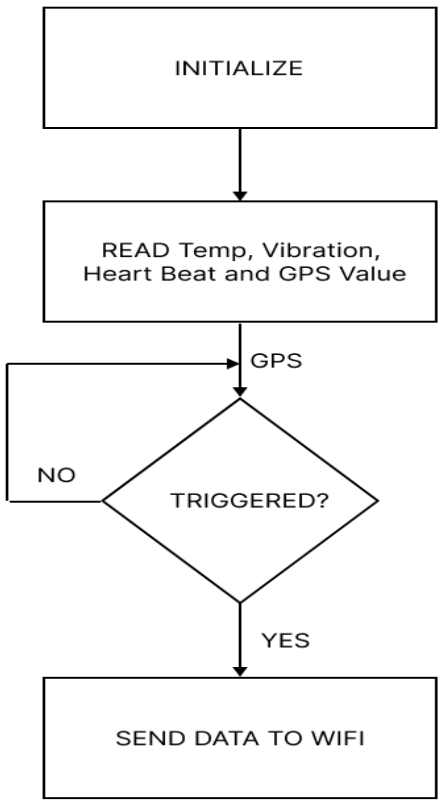
Acting on data could be something as simple as receiving a sensor (specified in Block) from Arduino and data send to the web server via the Wifi module.

WHY WOULD YOU WANT TO USE THINGSPEAK TO ACT ON DATA? Thingspeak Provides Tools That Enable Device Communication For All Of These Actions And More. You Can: React to data—both raw data and new data that you calculate—as it comes into a channel. Queue up commands for a device to execute.

III. WORKING

The suggested system will use GPS to find the person and deliver a message utilizing the system. To help people in an emergency, we must first figure out where the issue occurred by recording its location and sending a message to a family member or the emergency services. The Esp32 MCU microcontroller is used in this project. The mechanism is triggered by a change in threshold values or confirmation from the victim's emergency button. The exact location of the vehicle is sent to our Remote devices using IoT when the emergency occurs, the Emergency is determined with the help of these sensors like vibration sensor, pulse sensor, accelerometer sensor, and emergency button, which captures audio and video then it is sent at the time of Emergency.

FLOW CHART



IV. SYSTEM STUDY

EXISTING SYSTEM

There are a few already created devices and products in the market that are related to our research. Following are a few examples of the existing systems/devices:-

1. ROAR (Athena)
2. Footwear chip
3. Shake2Safety

DRAWBACKS OF EXISTING DEVICES

There was a chip attached to the footwear that was utilized to send the alerts. The other study involved a smart band that was utilized to generate SOS signals as well as personal health data, and an alarm was issued based on that. All of the gadgets were utilized to detect health parameters and body locations, and alerts and SOS signals were sent to the appropriate contacts.

PROPOSED SYSTEM

We have created a prototype that is a smart device that may be worn on the wrist by anyone. The band is always on, and the victim must tap the screen twice when she feels the need or believes she is being abused. The device will begin broadcasting the current latitudinal and longitudinal coordinates to nearby ICE contacts and the police control room when you press the button. An IoT gadget continuously sends all sensor readings to a web server. The Arduino UNO serves as the main controller in this system, receiving data from the sensor on a constant basis. We may set the threshold value by utilizing the microcontroller. It sends a notification to the user if it hits the threshold value.

V. FUTURE ENHANCEMENT

We can add video recording during an emergency in the future, which will make it much easier to locate the culprit. It also serves as proof against the offender. We can also store the photographs and movies on the drive for simple access in the future. The prototype may be further tuned into a complete market product, which will be manufactured with chips and utility hardware and can be linked to public transportation vehicles, allowing everyone to know where their loved ones are. We can also take images and email them along with the location to the registered phone number in the apps.

VI. CONCLUSION

When women are threatened, the number of security devices and software available increases. This study examines the different elements that have been incorporated into applications and smart gadgets designed to keep women secure. The numerous strategies employed so far for the protection of women against fraudulent people are discussed in this study. Also included is a brief description of the equipment and components used in these procedures.

VII. ACKNOWLEDGMENT

We would like to express our heartfelt gratitude to the management of our college and our beloved Head of Department, **Dr. D.Palanikkumar**, for guiding us and providing all of the necessary resources.

We would like to convey our heartfelt gratitude to our principal, **Dr.S.U.Prabha**, for allowing us to work on our project and providing us with sufficient time to complete it.

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