Women Safety Alert System Using Arduino

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Abstract: *International scenario, the prime question in each girl's mind is regarding her safety and therefore the harassment issues. the sole thought haunting every woman is once they are going to be able to move freely on the streets even in odd hours without fear about their security. Since the traditional time, ladies are given the most respected place within the society however daily and each minute some girls of all walks of life (women, women, and babies) are getting harassed, molested, raped, and profaned at varied places everywhere the world. It's calculable that 35% of the ladies have practiced physical and/or sexual violence at some purpose in their lives. This project suggests a replacement technology to shield women. This project focuses on security for girls so that they're going to ne'er feel helpless. The system consists of varied modules similar to GPS, buzzer, nodemcu.*

Keywords: GPS Tracker, Emergency Button Buzzer, NodeMCU, MQTT, Arduino

1. Introduction

Today many cases are happening about women. It was high time where we women needed a change. The safety and security of a girl will ne'er be at rest, regardless of what new device is on the market or regardless of however nice a brand new application is made, there continually are often one thing further to it. There can't be a cop continually guarding a woman, however, there can be secret safety measures with them which are often simply used at the time of threat and let the near folks recognize that there is one thing unhealthy happening and their support is need. This project is based on women's security where women feel protected. This paper describes safety electronic systems for women, built-in public transport vehicles such as cars, buses, and auto-rickshaws as nowadays women are being molested, kidnapped, and harassed by the drivers. In each field, there is a special impact of women Like sports, dance, education, business, in politics also. Women are leading in each field. Are the girls in India are safe? Always we get the answer No. Hence implemented electronic system is fitted in the jacket which has GPS, Buzzer which is interfaced with a nodemcu board to control all of the above.

2. Related Work

Generally, there are numerous issues confronted in today's international like women's harassment issues. Safety of women's subjects permit is whether or not at home, out of doors or not it's their painting place. Every day, each woman, younger girls, moms, and ladies from all walks of lifestyles are suffering to be secure and guard themselves against the moving gaze of the insensitive guys who molest, attack, and violate the honor of girls on a day-by-day basis. The streets, public transport, public locations particularly have to emerge as the kingdom of the hunters. Due to those atrocities that ladies are subjected to withinside the gift scenario, a clever safety wearable tool for ladies primarily based totally on the Internet of Things is proposed.

Shivani Ahir, Smit Kapadia, Prof. Jigar Chauhan (2018): Women security is would like of the hour nowadays. In India, there are several cases of girl's harassment and molestation. The safety of girls matters let be whether or not at home, outside of their workplace. The literature survey shows that several mobile applications are used for girl's safety purposes. One recent analysis study shows that there is a footwear chip that is stuck to the footwear that gets activated when the person faucets one leg behind the opposite four times. we tend to specialize in developing a prototype that's a sensible band that gets activated by sound on the screen twice. Once the device is activated it starts causing the GPS location to the ICE contacts and police management rooms.

Navya R Sogi (2018) SMARISA: A Raspberry Pi based Smart Ring for Women Safety Using IoT: Every day, each woman, younger girls, moms and ladies from all walks of lifestyles are suffering to be secure and defend themselves from the roving gaze of the insensitive guys who molest, attack and violate the honor of ladies on each day basis. The streets, public transport, public locations especially have to turn out to be the kingdom of the hunters. Due to those atrocities that ladies are subjected to withinside the gift scenario, a clever protection wearable tool for ladies primarily based totally on the Internet of Things is proposed. It is carried out inside the shape of a clever ring (SMARISA) and incorporates Raspberry Pi Zero, Raspberry Pi camera, buzzer, and button to spark off the services. This tool is extraordinarily transportable and may be activated through the sufferer on being assaulted simply through the pressing of a button to fetch her contemporary vicinity and additionally seize the picture of the attacker thru the Raspberry Pi camera. The vicinity and the hyperlink of the picture captured could be despatched to predefined emergency touch numbers or police thru clever tele-cells-smartphone of the sufferer for this reason stopping the usage of extra hardware devices/modules and making the tool compact.

DivyaChitkara, Nipun Sachdeva, Yash Dev Vashisht (2018): Women suffering violation are even denied essential human rights. Gender primarily based violence has become a national as well as international agenda due to decades-long struggles by civil society amid women's movements. although there are new numbers of laws against domestic violence, regulatory offense, and alternative sorts of violence in each country to shield their feminine voters to become a victim of any such violence however they're facing major challenges in implementing such laws. Therefore, creating a socially unjust and insecure for the women as in the majority of cases the violator remains unpunished.

Nandita Viswanath (2017)Smart Foot Device for Women Safety: In this paper, a strive has been made to expand a clever tool that may help ladies once they experience unsafe. This clever tool might be clipped to the shoes of the person and maybe precipitated discreetly. On tapping one foot at the back of the opposite 4 times, an alert is despatched thru Bluetooth Low Energy verbal exchange to the utility at the victim's phone, programmed to generate a message in search of assist with the vicinity of the tool attached. The outcomes acquired have been analyzed the usage of Naïve Bayes classifier and this low fee tool confirmed common accuracy of 97.5%.

3. Existing System

Today within-side the present-day worldwide scenario, girls are going through many troubles like girl's harassment. We endorse to have a tool that's the mixing of more than one device, hardware contains a wearable "Smart band" that without end communicates with a practical tele-cells smartphone that has get admission to the web. This paper covers descriptive information about the layout and implementation of "Smart band". The tool consists of a cause, of microcontroller, GSM module, GPS module, IoT module, Neuro Stimulator, Vibrating sensors, and a buzzer. In this assignment, while a girl senses chance she has to maintain ON the cause of the tool. Once the tool is activated, it tracks the present-day vicinity of the use of GPS(Global Positioning System) and sends emergency messages the use of GSM(Global System for Mobile communication) to the registered cellular variety and close to with the aid of using police station. IoT module is used to music the vicinity constantly and update the webpage. Neuro Stimulator will produce a non-lethal electric powered surprise in emergency conditions to hit upon the attacker, the buzzer is used as an alarm to alert the close human beings so that they may also recognize that a person is in want and vibrating sensor will ship the closing vicinity in case if the tool receives defected. The fundamental gain of this assignment is this tool may be carried anywhere considering its miles small.

4. Proposed System

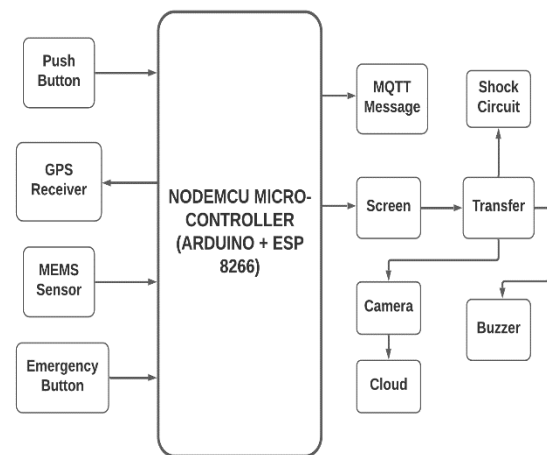The proposed work of or project block diagram is shown in Fig.4.1:

Figure 4.1: Architecture Diagram

The block diagram consists of the following boxes of Fig.4.1.

Node MCU
GPIO (General Purpose Input/Output) is a pin on an IC (Integrated Circuit). It can be an input or output pin, and its behavior can be controlled at runtime.

ESP8266MOD
The ESP8266 module works with 3.3V only, something quite 3.7V would kill the module, therefore, be cautious along with your circuits. The module may be a bit power hungry whereas programming. So, it's vital to create a little transformer for 3.31v that might offer a minimum of 500mAh.

GPS Module
The Global Positioning System (GPS) is a satellite tv for a pc-primarily based navigation gadget made from a minimum of 24 satellites. GPS works in any climate conditions, everywhere withinside the world, 24 hours an afternoon, and not using subscription prices or setup charges. GPS satellites circle the Earth two times an afternoon in a particular orbit. Each satellite tv for pc transmits a unique sign and orbital parameters that permit GPS gadgets to decode and compute the ideal vicinity of the satellite tv for pc. GPS receivers use these statistics and trilateration to calculate a user's precise vicinity. With four or greater satellites in view, the receiver can decide your three-D position (latitude, longitude, and altitude).

MQTT
MQTT (Message Queuing Telemetry Transport). It's helpful to be used with low-power sensors, however applies to several scenarios. Messages in MQTT are revealed on topics. Multiple purchasers connect with a broker and subscribe to topics that they're interested in. Purchasers additionally connect to the broker and publish messages to topics. there's no got to tack a topic, business on that is enough. the benefit of implementation is among the explanations why MQTT is ideally suited to little devices. MQTT consumer libraries are out there for an enormous form of programming languages. For example, Android, Arduino, C, C++, C#, Go, iOS, Java, JavaScript, and. NET. you'll see an entire list of them on the MQTT wiki.

Buzzer

A Buzzer or a device is associate with an audio signaling device, which can be mechanical, robot, or electricity. Usually, piezo speakers(buzzers) are used "piezo buzzer" is a small speaker that you just will connect to an Arduino. The piezo buzzer manufacture sound supported the reverse of the electricity effect. These buzzers are often accustomed to alert a user of an incident cherish a switch action, counter signal, or sensing element input.

Cloud

The entire information collected by sensors and cameras is kept in the cloud. soon these data will be retrieved whenever is needed. These data are extremely secured and conjointly by an authorized person. It is sold-out on demand, usually by the minute or the hour; it's elastic -- a user will have the maximum amount or as very little of a service as they need at any given time; and the service is managed by the supplier (the client desires nothing however a private pc and web access).

5. Methodology

System Architecture

This work develops a women's safety alert system which provides the current location and details of the ladies at risk mistreatment GPS and NodeMCU module. IoT module can track the location of the victim and update within the app.

Workflow of the proposed System

The workflow of women's safety is explained in this section. The flow chart of the proposed system is illustrated in Fig.5.1.

Step 1: Start.

Step 2: Press the button of the 12 Volt power supply.

Step 3: If the GPS is receiving a signal, GPS will start calculating the current latitude and longitude values of the victim and send it as SMS to the registered mobile number using the NodeMCU module.

Step 4: If any values greater than buttons are pressed, it gets the last location from GPS via MEMS sensor and sends to MY MQTT app alert message.

Step 5: IoT module tracks the last location of the victim and that location is updated in the MY MQQT app. Sends message as "MY LIFE IS IN DANGER".
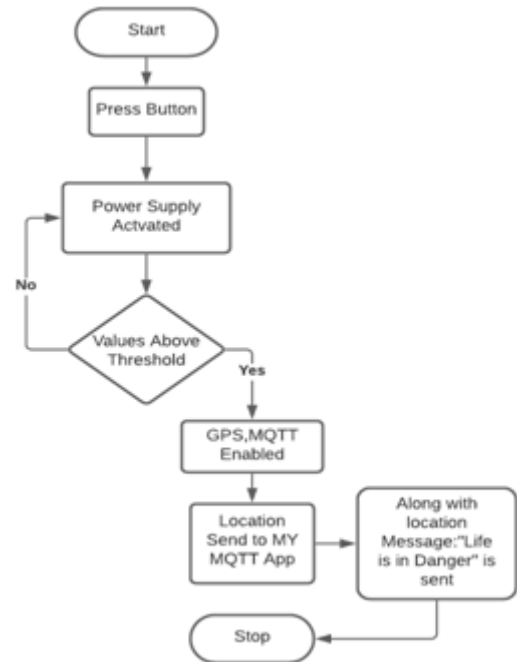
Step 6: Stop.

Figure 5.1: Flow Chart of Proposed System

6. Results

The main purpose of the work is to supply safety and security to women in a perilous situation. The button is pressed by the woman once she feels insecure. Once the button is ON, the microcontroller gets the commands and the GPS can calculate the latitude and line of longitude values of the victim. The calculated values are shown in Fig.6.1. MQTT module can send SMS that contains latitude and line of longitude values to the numbers already keep within the microcontroller and near a police station. MQTT can send SMS to the registered mobile numbers for each 1second. And show message IN MY MQTT app Dashboard is shown in Fig.6.2. IoT module can track the location of the victim and it'll update the situation on the dashboard in MY MQTT App. The microcontroller can start the buzzer in the device, so near individuals might return to grasp that someone is in peril and that they can return to rescue.

Figure 6.1: Message Appeared in MY MQTT App.

Figure 6.2: MY MQTT Dashboard

7. Conclusion

This project plays a crucial role in ensuring Women's Safety in the fastest way possible automatically. The proposed design will deal with critical issues faced by women in the recent past and will help solve them through technologically sound gadgets. With further research and innovation, this project can be implemented in different areas of security and surveillance. The system can perform real-time monitoring of the desired area and detect the violence with good accuracy.

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