Gyancity Journal of Engineering and Technology,
Vol.8, No.1, pp. 8-13, January 2022
ISSN: 2456-0065 DOI: 10.21058/gjet.2022.81002

Women's Smart Safety Device using Arduino

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ABSTRACT

Women's safety in India has become a concerning issue since 2010 with crimes against women growing at a high rate. Crimes like kidnapping, molestation towards women and young girls have increased. Nowadays Women's safety can be an important issue and rising crimes against women nowadays. The modified system is to style portable devices for the protection of ladies. It is a definite aid product designed to remain the user and their associate safe 24/7. It's filled with features for both everyday safety and real emergencies. The aim is to produce you with firmest and natural due to connecting your nearby hand. It is a tool used for women in confused situations. The essential approach is to use Arduino for sending and receiving data by the transmitter and receiver. The receiver section is connected to a GSM module which may send a text message to the pre registered mobile number.

Keywords: *Arduino, GPS, GSM.*

1. Introduction

In the present scenario ladies stay awake to men inside and out of life, however tragically at the expense of being presented to harassing, viciousness and fierceness call at the open and even in their own homes. they can not leave their homes whenever of the day they can't wear garments as indicated by their will and can't head to add harmony. There's a shame towards ladies that crush their feelings of opportunity and sabotage their trust and dreams, thanks to the above factors, it's quite clear that within the country there's a struggling need for women's safety. This device makes the strength of an insurance gadget that's planned simply to serve the explanation for bestowing security to women, so that they never experience powerlessness while managing such social requesting circumstances [5]. A propelled framework is often assembled which will help women after they are in harm's way. During writing this paper, we are using Arduino Uno which may be low cost and may

be portable and that we are employing a GSM, GPS, and RF Module [3]. Here we are using two ways of connecting to the concerned authorities. for ladies' safety and security purposes we made a tool which is extremely compact and should be triggered utilizing sufferers just clicking the button.

IoT is an arrangement of related sensors, registering and advanced gadgets that touch the world over the internet which might convey among them to share and move data utilizing exceptional id which is relegated to every and every gadget, as UIDs (unique identifiers). With the development of varied business premises and social orders, the concentration to computerize these premises have definitely expanded. The appliance sends an alert by way of an SMS with the person's location to the configured group through the world Positioning System (GPS) [4].application also makes a telephone call to at least one of the managed contacts. It may also be utilized in case of attempted molestation, accident, family emergency and chain snatching. This application also can be utilized by an individual who witnesses the incident. The users are required to submit personal details like emergency contact numbers [8]. The users can configure their own list of contacts including close relatives and friends.

2. Proposed method

2.1. Arduino nano

The Arduino nano could be a small, complete, and breadboard-friendly board supported by the ATmega328p released in 2008. It offers the identical connectivity and specs of the Arduino uno board during a lower form factor. It may be programmed using the Arduino Software (IDE), which is common to all or any Arduino boards and running both online and offline. The boards are frequently powered through a type- B micro-USB string or from a 9 V battery. The Arduino Nano is equipped with 30 I/ O heads, in a DIP30- suchlike configuration, which can be programmed using the Arduino Software integrated development (IDE), which is common to all Arduino boards and running both online and offline [1]. The board can be powered through a type- B micro-USB or from a 9 V battery.

2.2. GPS module

Then we're using the NEO6M GPS module. TheNEO-6M GPS module could be a popular GPS receiver with a erected- in ceramic antenna, which provides a robust satellite hunt capability. This receiver has the power to smell locales and track up to 22 satellites and identifies locales anywhere within the world. With the on-board signal index, we will cover the network status of the module. It's a knowledge backup battery in order that the module can save the information when the most power is cleaned up [2]. The core heart inside the GPS receiver module is theNEO-6M GPS chip from u-blox. It can track up to 22 satellites on channels and have a really

emotional perceptivity position which is-161 dBm. This 50- channel u-blox positioning machine boasts a Time- To-First- Fix(TTFF) of under 1 second. This module supports the baud from4800- 230400 bps and has the dereliction baud of 9600.

2.3. GSM module

This can be a GSM/ GPRS-compatible quadrangle-band mobile phone, which works on a frequency of 850/ 900/ 1800/ 1900 MHz and which may be used for colorful operations like access the web, make a voice call, shoot and admit SMS, etc. The frequency bands of the GSM modem are frequently set by AT Commands [7]. The baud is configurable from 1200-115200 through AT command [5]. The GSM/ GPRS Modem has an interior TCP/ IP mound which enables us to attach with the web via GPRS. This can be an SMT type module and designed with a really important single- chip processor integrating AMR926EJ- S core, which is extremely popular in colorful artificial products.

2.4. 433MHz transmitter and receiver

433 MHz transmitter and receiver- The 433 MHz RF transmitter and receiver module may be a brace of small RF (i.e. radio- frequency) electronic modules accustomed to shoot and admit radio signals between any two points [3]. The transmitter module sends the info from the transmitter end and also the receiver module receives that data at the receiver’s end. The Transmitter offers only one-way communication through 433.92MHz frequency at 1Kb rate. It operates at a spread of 3-12V which is additionally the facility operating volts of most of the microcontrollers and boards. It is one amongst the very low-cost power effective modules for both commercial, hobbyist, and developers [6]. 433MHz Transmitter is one in all the most cost-effective RF transmitters and it's lots of applications and may be used interface with almost every microcontroller.

3. Implementation

With all the technology available to us in recent times, it isn't hard to create a security device for girls which is able to not only generate an emergency alarm but also send a message to your friends, family, or concerned person. Here we are going to build a band that may be worn by women, using which they will inform police or anyone, using SOS emergency SMS together with this location [7]. Using this information, the police are ready to save the victim from the situation. For this, here we are using an Arduino which may be interfaced with GSM and GPS modules for sending SMS alerts and getting the situation coordinates [4]. We've got also used an RF Transmitter and receiver module for wireless communication between the Band and Receiving device with GPS/GSM.

3.1. Receiver section

In the RF Receiver section, the data transmitted from the wrist band (Transmitter part) is entered by the device having a 433 MHz RF receiver. The RF receiver sends this information to Arduino through the digital leg. Arduino Nano also receives the signal and processes it using the program which is flashed into it [11]. When the victim presses the SOS button in the transmitter part, a HIGH signal is generated and passes to the Arduino side, and also Arduino sends a signal to SIM900 modem, to shoot an SMS to Registered stoner along with the GPS match by the help of NEO6M GPS module.

3.2. Transmitter Section

In the RF Transmitter part, there'll be an SOS button together with a 433 MHz RF transmitter, which can transmit the info to the receiver part wirelessly. the aim of constructing two individual parts here is, to reduce the dimensions of the transmitting module in order that it may be worn as a wristband. The transmitting part can also be embedded in some kind of a hand-band or a purse which the user carries often [8]. When the user presses the button, the transmitter will send a signal to the receiver which is connected to the Arduino nano.

4. Results and discussions

This device has been designed keeping in mind the adding violence against women. This system is designed to help women in torture situations to call for help as well as alert the girding people. It has been developed as an idea to make the security device more movable and comfortable[11]. This system was designed after reference to a formerly enforced system. Then measures are being made to overcome the excrescences in former designs and also to reduce the power consumption. As this mode is actuated by the drive button, it takes 7 seconds to gain the equals and dispatches are transferred to the trusted connections within intervals of 4 seconds [10]. The communication contains a hyperlink which directs the philanthropist directly to google maps where the position of fabrication of the torture communication will be displayed. This device has been designed keeping in mind the adding violence against women. This system is designed to help women in torture situations to call for help as well as alert the girding people. It has been developed as an idea to make the security device more movable and comfortable.

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5. Conclusion

We can also connect this system with a Smartphone or Mobile and laptop. We can use this safety device in handbags, luggage, vehicles etc. By using Nano size objects, the size gets reduced. Using the wireless GPS module and wireless SOS button the carrying of the device can be avoided. This system also can be connected with the vehicle's air bag system. We can decrease the device size by using small components, which will significantly increase the cost which could be a setback in India. With the use of hand band ideas and the messages with GPS location coordinates [9]. From the above shown device can help in the suffering and/or emergency of every woman in the world about her assurance and security.

6. Acknowledgements

I would like to thank my parents. Without them, I would not have been able to write this research paper.

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