

Implementation of Women Safety System using Internet of Things

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ABSTRACT

In today's world both men and women are having equal responsibility in their works and competing with each other in all the fields. Women face challenges in the workplace and safety become a major issue in most of the countries. Increase of issues like sexual harassment is one of the common offense happening frequently and the thought haunting in women mind is how to move freely in streets during the odd hours. In such critical situations to help women, we proposed an idea of using Internet of things (IoT) for Women Safety with alarm. IoT interconnects billions of devices and exchange useful information which plays a vital role in women safety. This paper summarizes the various safety measures available for women and this task goes under the piece of keen security. New perspective of women security caution framework with Arduino is proposed which has the capacity of sending SMS alert to the relatives of the victim so that women can go out and do things without hesitation. Our framework additionally has one Arduino robber alert in the framework which detects and warns the authorized person on any unauthorized intrusion. Thus the proposed system is reliable, low cost and user friendly helps women to overcome their fear in critical situation..

KEYWORDS: Women Safety system, SMS alert, GSM

I. INTRODUCTION

The task includes the utilization of Arduino, movement sensor, signal, and a straightforward program. At the point when switch is on that will triggers the alert. It will likewise send the sign to Arduino which procedures the sign and set off the alert alongside discovery message in plain view. With this framework we can without much of a stretch set up a security caution for undesirable badgering.

The requirement for lady's security frameworks these days is a genuine interest. As the quantity of wrongdoings are expanding each day, there must be something that will protect us. We are for the most part mindful of the top of the line security frameworks present in the market yet they are not effectively accessible to everybody. We in this manner plan to give an answer by developing a value proficient electronic framework has the capacity of detecting the movement of the gatecrashers and setting off the caution. The essential thought is undertaking is that all is by triggering a basic switch on account of crisis.

II. RELATED WORK

Mahmud Shehu Ahmed and et al., utilized various ways for interfacing the gadgets, circuits and so forth. The goals for the task are portrayed. Identify a movement – an interloper or a robber utilizing PIR sensor. Actuate the signal endless supply of criminal/gatecrasher – Alarm should sound until

How to cite this paper: S Pradeep | Kanikannan | M Meedunganesh | A. Anny Leema "Implementation of Women Safety System using Internet of Things" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-4 | Issue-4, June 2020, pp. 258-261, URL: www.ijtsrd.com/papers/ijtsrd30945.pdf



IJTSRD30945

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Reset switch is squeezed. Sounds stronger than the light flashes around and offers sign to the security or encompassed people groups that interlopers go into the home [1].

Khanna Samrat Vivekanand Omprakash depicted about the working procedure characterized by different ways and the accompanying thought is. This framework is an essential movement enacted alert. It is worked around an Arduino Microcontroller. It is associated with a PIR movement sensor, a ringer, a resistor, and a couple of outside terminals. The entire framework is battery fueled with the goal that it is effectively compact. When you have the code, you can interface all the outer parts. The least demanding approach to do this is with a breadboard. This will give you a chance to make transitory associations with test everything out. What's more, they likewise incorporate the favorable circumstances and weaknesses for this thief alarm [2].

Suman Pandit, and et al., describe about the points of interest and hindrances in the favorable circumstances are, the given framework is helpful and convenient, and along these lines can be effectively conveyed starting with one spot then onto the next. The hardware isn't that confused and accordingly can be effectively troubleshooted. The given framework sets off an incredible bell, and it is successful as some other caution framework accessible in the market. The

hindrances are, the given caution framework decides the nearness of the interloper just, and doesn't decide what number of people are in there really. The caution initiates just when the individual slices through the line of the PIR sensor. What's more, the future degree for this venture are, we can add a keypad to arm or incapacitate the alert. We can decide the situation of the interloper and after that send a SMS to the concerned specialists [3].

IoT based system was developed to monitor the elder people to assure their safeties when they are alone at home. To monitor their daily activities of walking, sitting, standing and lying the Inertial Measurement Unit and threshold based algorithms were used [4]. To help female in dangerous situation of teasing, rapes, perverts, fainting suddenly IoT based system is proposed to track their location and send messages to the nearby police station and victim relatives. Arduino uno board is used as the micro controller to which the various sensors like heart beat sensor, flex sensor to measure declination, detect vibration are attached Arduino c software is used to get the details of the various sensors and micro controller. The condition of the women is monitored and in emergency situation the information is passed immediately to the victim registered network and nearby police station. [5]

The woman safety device concept was introduced and the panic button was pressed out of danger. This paper explained the three modes of operation like default mode, sending location mode and calling mode. Each mode has its own drawback and conference call can't be made in the calling mode [6]

To protect women in dangerous situation Arduino microcontroller named SAFE SOLE is proposed as safety device which uses GPS, GSM to ping the user location automatically. The emergency situation is detected when the women forcefully tap three times on ground and pings the distress signal so that the authorized person of the victim network will receive the notification immediately [7] Prototype model was developed to help the women in danger using the various sensors like vibration sensor, tilt sensor and heartbeat sensor. Every 15 sec the health details are transferred to nearby police station or the relatives of the victim [8]. GPS based women safety system was developed which alerts the authorized network when women are in danger. In other female safety system, When a woman is hit from the back she may never get the chance to press the panic button and no one will know that she is in trouble. Hence new type of system is developed such that the device is turned on in advance when women enters the remote place or dark area. The woman can activate the device by fingerprint scan. The location of the woman are transferred to the authorized personal numbers of the women so that crime against the women are getting reduced [9]. Female safety system was developed using pulse sensor, ultrasonic sensor and the GSM module is used to send an alert message with the live location. GPS module is used to track the location of the women. Any unauthorized person goes closer to the women, the situation is sensed and the alert is given to the nearby people to indicate that someone is in dangerous situation [10].

III. PROPOSED WORK

To design and plan IoT in women safety with alarm to use in the needs of emergency for ladies and also for kids. In our

design the flow of data is shown in the block diagram depicted as Fig:1

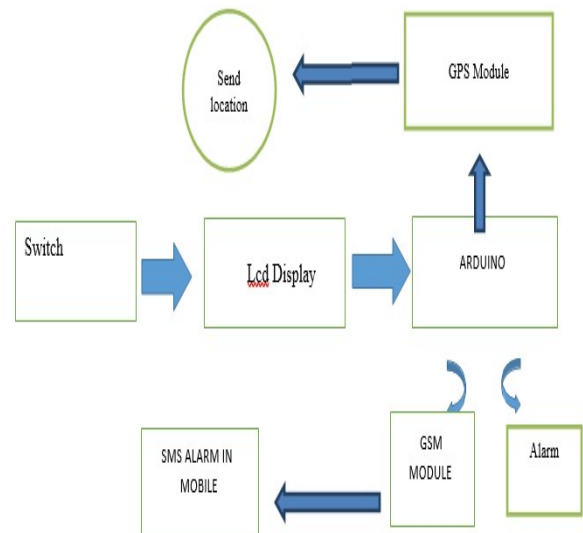


Fig:1 Flow of Data in the Proposed system

IV. MODULE DESCRIPTION

Hardware requirements

A. ARDUNIO UNO: It is the principle controller utilized in this venture. It recognizes the sign from PIR sensor and sends directions to GSM Module in like manner. The sequential pins of the Arduino are utilized in this venture to speak with GSM module. This prominent board — in view of the ATmega328 MCU — highlights 14 advanced information/yield pins of which 6 can be utilized as pulse width regulation outputs, 6 simple data sources, a 16 MHz fired resonator and USB association, control jack and the ICSP(In circuit sequential programming) header and a reset catch.

Technical specification for Arduino uno:

Microcontroller	Atmega328P
Operating Voltage	5V
Input Voltage (recommended)	Voltage 7-12V
Input Voltage (limit)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM)
PWM Digital I/O Pins	6
Analog Input Pins	6
DC Current per I/O Pin	20 Ma
DC Current for 3.3V Pin	50 Ma
Flash Memory	32 KB (Atmega328P) of which 0.5 KB used by bootloader
SRAM	2 KB (Atmega328P)
EEPROM	1 KB (Atmega328P)
Clock Speed	16 MHz
Length	68.6 mm
Width	53.4 mm
Weight	25 g

B. GSM MODULE: SIM 900A is the GSM/GPRS module with worked in RS232 interface. With the assistance of RS232, the modem can be associated with PC or microcontroller by means of sequential link. Voice calls, SMS and web access are conceivable with this module. There are ready associations for receiver and earphones with which we can make or get calls.

C. Buzzer: A bell or beeper is a sound flagging gadget, employments of signals and beepers incorporate caution gadgets, clocks, and affirmation of client information, for example, a mouse snap or keystroke.

D. Breadboard: A breadboard is a development base for prototyping of hardware. This makes it simple to use for making impermanent models and trying different things with circuit plan. Thus, solderless breadboards are likewise well known with understudies and in mechanical training.

E. GPS Module: It sends the surmised area of the individual, it needs three satellite associations for sending the correct information.

F. Switch: It is utilized for on or off the trigger, and one of the primary part for the undertaking.

G. LCD: LCD (Liquid Crystal Display) screen is an electronic module A 16x2 LCD show is basic module and is typically used in various devices and circuits. The request register stores the course rules given to the LCD. A request is a direction given to LCD to do a predefined undertaking like instating it, clearing its screen, setting the cursor position, controlling introduction, etc.

H. ADAPTERS: AC/DC converter is a kind of outside power supply, frequently encased for a situation like an AC plug. The interior hardware of an outer power supply is fundamentally the same as the structure that would be utilized for an implicit or inward supply.

I. Resistor: We need 2 resistor. to limit the power supply for a ringer and complexity show for lcd..

J. Wires: It is utilized for interfacing the gadgets, and the circuits it has three sorts

1. Male to Male
2. Female to Female
3. Female to Male

SOFTWARE REQUIREMENTS

A. ARDUINO IDE:

It is a product, which is utilized for Arduino uno board associations into a framework and furthermore it is like a programming compiler like devcpp and Geany which is utilized for check, investigate coding and furthermore it has an uncommon component of transfer your code into an associated board.

B. EMBEDDED C:

Most contraptions currently offer choices for changing the compiler improvement. Likewise, using C extends convenience, since C code can be amassed for different sorts of processors.

C. BREAD BOARD PROTOTYPE:

A breadboard acts as a construction base, used for creating temporary prototypes. It is very popular and used by students to create IoT based project and it is depicted in Fig: 2 and architecture of the prototype is given in Fig:3

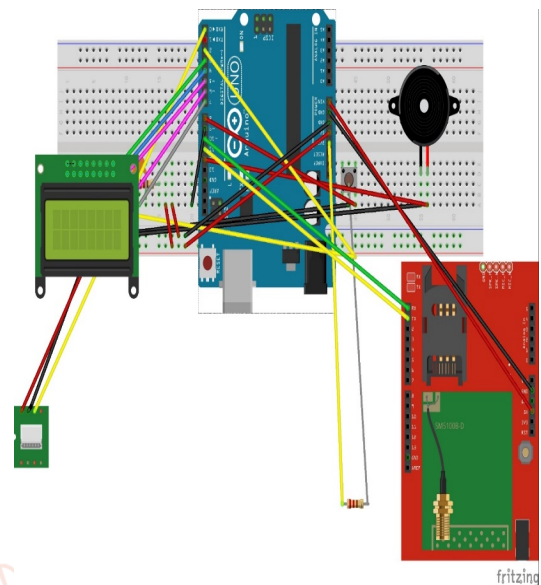


Fig: 2 BreadBoard Prototype

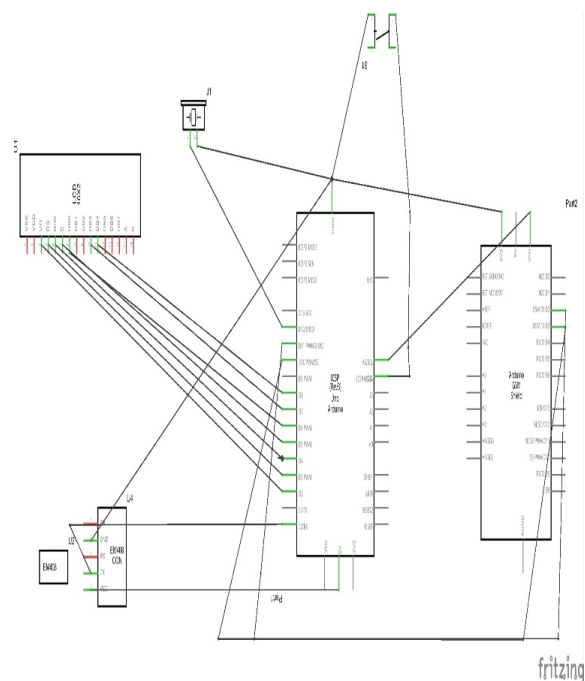


Fig: 3 Architecture Prototype of the Proposed System

V. Algorithm For product implementation

1. Take a Bread board and power it up the circuits the necessary power is 2+ve (power supply) 3-ve (Ground)
2. Now attach the LCD display parallel to power up connections.
3. Now connect Arduino Uno digital pins 7,6,5,4,3,2 to the Bread Board connection for LCD. And use 2 resistor and 1capacitor for LCD Brightness.
4. Now connect GSM Module ground (GND) to the Arduino Uno power side ground (GND)
5. Connect GSM 12v to the Arduino Uno power side Vin (power input) we are taking power from the gsm module directly to the whole circuit.
6. Connect GSM RX (receiver) to the Arduino Uno digital pin 10.
7. Connect GSM TX (Transfer) to the Arduino Uno digital pin 11.
8. Now Connect GPS Ground (GND) to the

Bread Board ground (GND) -ve hole. **9.** Connect GPS VCC (power supply) to the Bread Board Positive +ve hole parallel to GPS ground -ve hole. **10.** Connect GPS TX (transfer) to the Arduino Uno Digital Pin RX-0. **11.** Now Connect Buzzer Red Wire VCC (Power in) to the Arduino Uno Digital Pin 12. **12.** Connect Buzzer Black Wire Ground (GND) to the Bread Board ground (GND). **13.** Now at last connect Switch in Bread Board where power supply 3.3v taking by resistor. **14.** Switch VCC (power in) to the Arduino Uno digital pin 8. **15.** Switch Ground (GND) to the Bread Board Ground (GND). **16.** And finally, we need 12v power supply for the GSM by using external power supply adapter for powering up the whole circuit to work properly. The entire process is implemented and it is shown in Fig:4

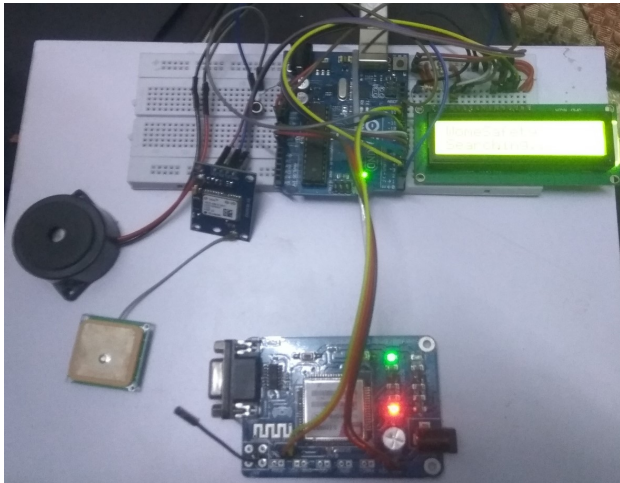


Fig: 4 Implementation of the Female Safety System

When the GPS is turned on the location of the woman is pinned and through GSM module, the the message is sent from the microcontroller to the victims authorized group stating "Women insecure" as shown in Fig: 5

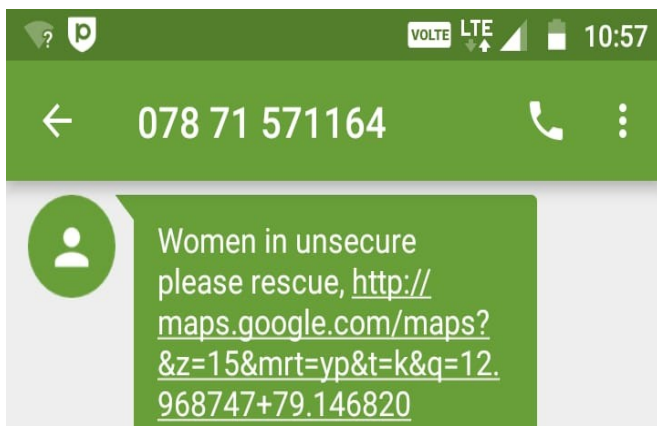


Fig: 5 Message sent from Female safety system

VI. CONCLUSION:

IOT in Women's safety with alarm has been anticipated in this work to support the notion of smart cities. The proposed system involves Arduino UNO, GSM, GPS and various sensors. The GSM and GPS helps to send the message and location of the victim to the authorized

network at the time of critical situation. Hence it becomes easy to find the appropriate location and major drawbacks of this system is it may get failed in a closed or dumped area. To overcome this issue, we need to work with real time GPS location for a future scope and studies. And also have an idea of sending danger message to the surrounding public by their ip locator.

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