Implementation of Women Safety Device

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ABSTRACT --- **In the recent years the crime rate against women have increased a lot. This project deals with improving women safety measures and provide security to women all time. This project provides security like sending information to emergency contacts and nearby police stations. For this prototype the hardware used are Node MCU, GSM/GPRS module, pulse rate sensor.**

Keywords: Node MCU, GSM/GPRS, SMS, Pulse rate sensor.

1.INTRODUCTION

In the existing era girls are taking identical responsibilities in art work area. They are preserving paintings and home concurrently which calls for travelling and working weird shifts. Safety is a major problem which restricts girls. For girls to develop in their problem of exertions or simply live their lives and experience free, safety ought to be granted in all spheres. India is still trapped inside the clutches of numerous patriarchal evils like molestations, assaults, and diverse crimes against ladies. These crimes may be devoted by the use of strangers, friends or even family members. Rapes and sexual harassment cases were document through ladies in workplace, public area, at homes, etc. In India such cases have accelerated by manner of 83% from 2007 to 2016. The current National Crime Records Bureau records displays how incidents of rapes have long beyond up thru 12-15% whilst exclusive crimes have risen thru 3-5%. At 25% the conviction rate of crimes against women in 2016 modified into lowest considering 2007. This is because of severa motives such as loss of evidence, chickening out case for personal protection issues, societal norms etc.

The authorities has taken measures to reduce the crimes through legal guidelines and legislations to guarantee safety in workplace, public places. Punishment for such crimes were made more extreme New legal guidelines were set up and changes have been made to the present ones however as seen from the statistical records the crime quotes are still high. This requires a protection provision with a view to be capable of make ladies defend themselves, hold them secure and secure and not sense helpless even as alone within the street's workplaces or at domestic.

In order to serve the purpose, we've evolved a prototype of Women Safety Device which may be utilized in workplace, market area, and various public places. It provides functions for self-defense and alerting the user's emergency contacts thru location facts and auto-dialed call.

2.EXISTING METHODS

In a device named SIREN that is disguised as ring, it helps users live safe with the aid of emitting a noisy and piercing sound to confuse and distract attackers. The loudness of the sound is over one hundred ten decibels and may be heard from 50 ft distance. Users without a doubt twist the pinnacle of the ring to the left, about 60 degrees, to emit the loud sound

In ref. ATHENNA creates a simple way for girls to get help. Roughly the size of a half dollar coin, Athena turns on a noisy alarm when users press a button.

In a tool named ILA SECURITY, the co-founders of this gadget have designed 3 personal alarms which can surprise and disorient potential attackers. The drawbacks of

this gadget are that it does no longer notify anybody regarding the location of the sufferer and no proof is collected against the culprit.

Devices like 'One Touch Alarm System for women's safety the use of GSM' includes a microcontroller, GSM module, GPS modules. When the gadget is activated, it tracks the area of the girls the usage of GPS (Global Positioning System) and sends emergency messages the use of GSM, i.e., Global System for Mobile Communication, to selected contacts and the police control room. Emergency button trigger is used to spark off the device [2]. In 'GPS and GSM Based Self Defense System for Women Safety' , a further speech circuit is supplied to alert humans around, in conjunction with the provisions within the above-referred to design.

With addition to these diverse programs have additionally been advanced such as 'VithU'. The VithU software is an initiative taken by means of a television channel, Channel [V], for the emergency cases. With simplest 2 clicks of the energy button, all people facing hazard can ship out an SOS message to their guardian . 'Jivi 2010' an inbuilt utility of JIVI smartphones permits customers to send alert messages and SOS messages to detailed receivers or guardians with the area of the victim.

Many wearable gadgets were developed that contains GPS and GSM technologies with numerous sensors and microcontrollers such as 'Suraksha' and 'Amrita personal protection system (APSS)' which are easy and smooth to carry gadgets with basic method to intimidate instant vicinity and a distress message to the law enforcement officials and registered number.

An Arduino based layout has been evolved wherein along with tracking features a digicam has been attached to document evidence. Also, Android application have been advanced which uses the GPS, feature gift on the cell phones to send locations and alert messages through voice command and clicking button in the apps.

Drawbacks:
- No provision for facts storage.
- Features of the device may be restricted in number

Products were advanced in cloud technology making devices greater efficient user friendly and much less implementation cost. It objectives to offer low value IoT based solutions for ladies safety which incorporates image shooting of culprit, making alert call via cloud (Twilio) to family, police station alerting woman is in danger locating the position of ladies underneath threat.

An Arduino primarily based electronic device for women which incorporates of sensors including temperature LM35, flex sensor, MEMS accelerometer, pulse rate sensor, sound sensor which senses the frame parameters like heart fee, alternate in body temperature, the movement of the user with the aid of flex sensor, MEMS accelerometer and the voice of the sufferer is sensed by using sound sensor. When the sensors cross the threshold limit, the device is activated and it lines the vicinity of the sufferer the use of the GPS module. By the use of the GSM module, the victim's vicinity is dispatched to the registered contact number.

A Raspberry Pi based design has been done which, in conjunction with alerting and self-defense mechanisms, provides communication with close to via police stations. One of the prevailing works is based on ARM controller and Android application in which each the tool and the smart telephone are synchronized using Bluetooth, therefore both can be caused independently. For similarly investigation, we can record audio and might send an alert name and message to the pre-set contacts with the current area each 2 mins and it may be tracked stay the usage of our application. Hidden digital camera detector is likewise a distinct function using which we can make certain our privacy.

3.PROPOSED METHOD

From the present works, we can infer the subsequent as necessities for a protection device:
- Location statistics of the user
- User friendly
- Cost effective
- Portable
- Less time for processing

Based on those inferences, a epitome for making positive women's protection has been developed which could facilitate a female hold secure and guard herself.
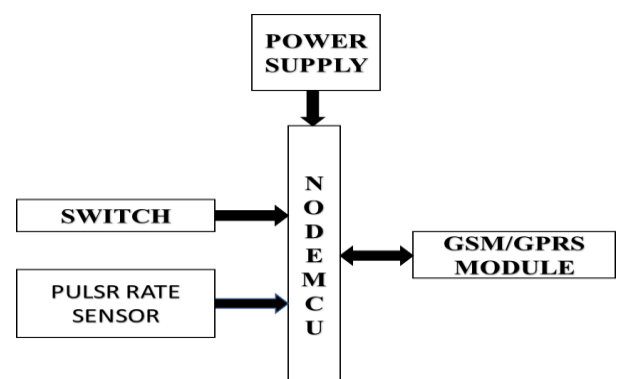

Fig:1 Block Diagram

The employer of the paper is noted here. Section IV explains the methodology of the gadget and therefore the development at the facet of the algorithmic application of various factors gate. It conjointly offers information of the

hardware and software system used. Section V discusses the results. Section VI finished the paper and provides the long run scope of this work.

4.METHODOLOGY

This version serves as an alerting tool. In this Project, we use GSM/GPRS which is able to sending SMS to the cell in real time purposes and also GPS locations to show the precise latitude and longitude coordinates of the user location. A switch is hooked up here to prompt this components. An Android software is used to prompt SMS and location .

A. HARDWARE SPECIFICATIONS

The specs of the hardware utilized in this undertaking are given below:

NODE MCU is an open-supply firmware and development kit that allows to construct IoT product. Node MCU is evolved to make less difficult using advanced API for hardware IO. The API can reduce redundant work for configuring and manipulating hardware. Node MCU is designed like Arduino hardware Input Output (IO). Node MCU makes use of lowest value Wi-Fi MCU that is ESP 8266.

ESP8266 is the most integrated Wi-Fi chips. Size of the chip is 5mm x 5mm. ESP8266EX requires minimal external circuitry and integrates a 32-bit Tensilica MCU, popular digital peripheral interfaces, antenna switches, RF balun, strength amplifier, low noise receive amplifier, filters and strength management modules - all in one small package.

ESP8266EX integrates Tensilica L106 32-bit microcontroller (MCU) which capabilities greater low electricity consumption and 16-bit RSIC, accomplishing a most clock velocity of a hundred and sixty MHz With the Real Time Operation System (RTOS) enabled and Wi-Fi stack functional, approximately 80% of the processing electricity is still to be had for user application programming and development.
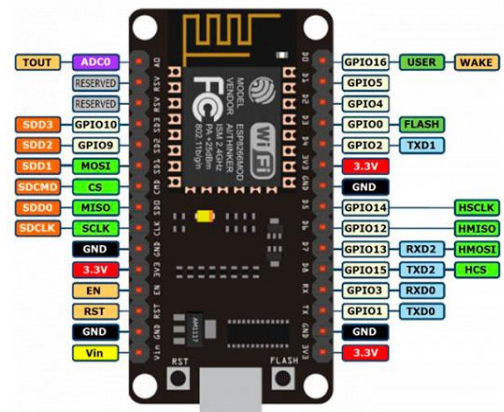

Fig:2 NODE MCU

GSM/GPRS module is applied to set up conversation among a laptop and a GSM-GPRS framework. Global System for Mobile conversation (GSM) is a layout utilized for mobile communique in a huge portion of the nations. Global Packet Radio Service (GPRS) is an augmentation of GSM that empowers higher statistics transmission rate. GSM/GPRS module comprises of a GSM/GPRS modem amassed together with power supply circuit and communication interfaces.

Fig:3 GSM SIM 800L

Pulse Rate Sensor is a plug-and-play heart-charge sensor for Arduino. It can be used by students, artists, athletes, makers, and game & mobile developers who want to effortlessly incorporate live heart-rate information into their projects [8].It essentially combines a easy optical heart price sensor with amplification and noise cancellation circuitry making it fast and easy to get dependable pulse readings. Also, it sips energy with just 4mA contemporary

draw at 5V so it's terrific for cellular applications. Simply clip the Pulse Sensor in your earlobe or fingertip and plug it into your three or 5 Volt Arduino and you're equipped to examine heart fee.
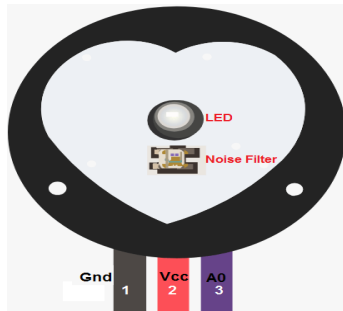

Fig:4 Pulse Rate Sensor

Lithium Polymer Battery or more effectively lithium-ion polymer battery is a rechargeable battery of lithium-ion technology the usage of a polymer electrolyte rather than a liquid electrolyte. High conductivity semisolid (gel) polymers shape this electrolyte. These batteries provide higher specific electricity than different lithium battery types and are used in packages where weight is a essential feature, like mobile devices and radio-controlled aircraft.

Fig:5 LiPo Battery

B. SOFTWARE SPECIFICATIONS

The software details of the challenge are given below:

ARDUINO IDE or Arduino Integrated Development Environment (IDE) is a cross-platform application (for Windows, macOS, Linux) this is written in features from C and C++. It is used to put in writing and upload packages to Arduino and NODE MCU well matched boards, however also, with the help of 3rd celebration cores, other vendor development boards.

Arduino IDE contains a text editor for writing code, a message area, a textual content console, a toolbar with buttons for common capabilities and a sequence of menus. It connects to the Arduino and Genuino hardware to upload programs and speak with them.

C. ALGORITHM

The predominant set of rules for the operating of the designed prototype . The NODE MCU gets a sign while the transfer is pressed and then it sends indicators to spark off the GSM/GPRS. If this condition holds real then a signal is despatcher to the GSM module for SMS and GPS location. Then the repute in server is back to the preliminary state.

The AT commands used are as follows:
AT: Command to test the circumstance of the modem and provoke transmission.

AT+CMGF=1: Command to permit Text Mode.

AT+CMGS= [Mobile Number]: Command to send SMS number referred to in command.

5.RESULT AND DISCUSSION

The hardware setup of the proposed layout of the ladies protection devices. So, as shown in the diagram by pressing the panic button and checking the values of the pulse rate sensor is better then the ordinary values then automatically sign is sent to the GMS/GPRS.
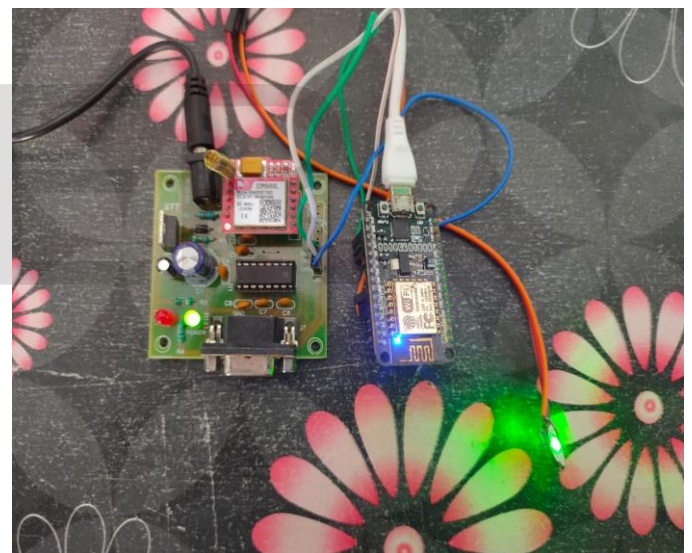

Fig:6 Hardware Setup

Through this GSM/GPRS module the message and latitude and longitude locations are despatched to the emergency contacts.
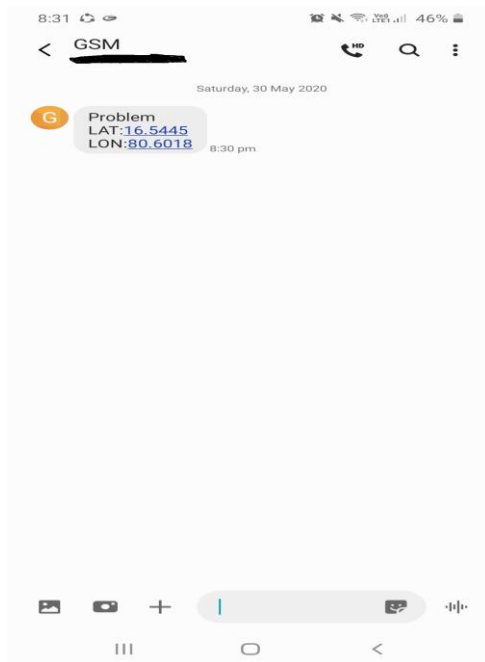
Fig:7 Text Message with Location details

6.CONCLUSION AND FUTURE SCOPE

The Women's Safety Device serves its purpose efficaciously by providing tracking information. The response of the device is fast and it may assist the user to live safe in any place.

This prototype may be in addition developed similarly to make a wearable device. The design may be made extra compact and lighter in weight so that it could be easily transportable and person friendly. It can have provisions to enter multiple contact information as in keeping with the consumer's requirements. More defence capabilities may be added which can be managed by numerous monitoring system.

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