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AN IOT BASED WOMEN SAFETY JACKET USING ARDUINO NANO

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Abstract - *India is rapidly moving on the path of being a promising super power and an economic hub. But this goal can be achieved if large number of women participate in the development process, and join for jobs. In India at the recent past there are more number of crimes on women and children who are attacked/harassment when walking or traveling alone in cab or unknown area. In many cases it is almost midnight and it is helpless for the person who is attacked to escape from criminals. In many cases the person cannot even open her mobile and inform anyone, so we decided to provide a solution for this major problem in our country which is also the primary concern of women.*

The security system for women which allows immediate response in case of any harassment, it consists of arduino nano, GPS, GSM, camera, battery, switches. The system has a power switch which is used to switch on the circuit and the second switch when pressed sends the location to predefined numbers and police station. The third button is used to switch on the camera which is connected to the circuit which will capture images of the culprit.

Key Words: *Arduino Nano, Memory, GPS, GSM, Camera, Switch.*

1. INTRODUCTION

In global scenario, the prime question in every girl's mind is about her safety and harassment issues. The only thought haunting every girl is when they will be able to travel without worries even in odd hours. It focuses on a security device for women so that they will never feel helpless. It is based on women's security as it is reported that every day there are many cases about women harassment. It is a simple and easy to carry device with magnanimous functionality. The basic approach is to intimidate instant location and a distress message to the cops and registered number, so that unfortunate incidents would be averted and to provide real time evidence for swift action against the perpetrators of crime against women [1].

The security system for women which allows immediate response in case of any harassment and mainly focuses on two different parts, one is developing mobile applications for women safety and protection and secondly to develop a device/circuit. Mobile phone app sends the messages to predefined contacts in which one is for information about location of the victim through GPS and message alert help [2].

Day by day the attacks on women are increasing and, in some cases, she is not even able to take her mobile and dial up for help, this system will help women in such cases to inform about attacks and also by delivering her exact location to nearby police station. In this we present an undefined combination of wearable jacket at optimum result with minimum mobile technology, to help the victim in any kind of emergency situation. This application gives the security system which is designed to help women to do their work with comfort and can go to the places they wanted and work with comfort. By pressing the button of the system, a helping message along with her location will be sent by the system. Along with the message the system will also capture images and videos[3].

1.1OBJECTIVE

The main purpose of this paper deals with creating a circuit/gadget which is used for the protection of women, elder and challenged people.

The circuit can deliver locations over the text message and can capture images and videos of the culprit, so that it will be helpful to know who is in trouble and where and to know more about culprit. Which is in turn helpful for the police department.

The main motive of this prototype is that relief is to be issued to people who are travelingalone or who is aged and weak of resisting the attacks from going down before they are able to reach someone.

1.2 METHODOLOGY

The proposed system is to design a portable device which resembles a normal jacket. It consists of Arduino nano, GSM/GPS modules, PIR sensor, Camera and two push buttons. The prototype includes two independent system controlled using two switches. When first switch is pressed the device will get activated, immediately the location of the victim will be tracked with the help of GPS and emergency message along with latitude and longitude value will be sent to stored contacts every one minute with updated location. When second switch is pressed the system will switch on the camera. The receiver will receive victim's updated location in form of coordinates which can be used to find exact location using GOOGLE MAPS. The camera will record and capture the images of the situation which will be helpful for further investigation.

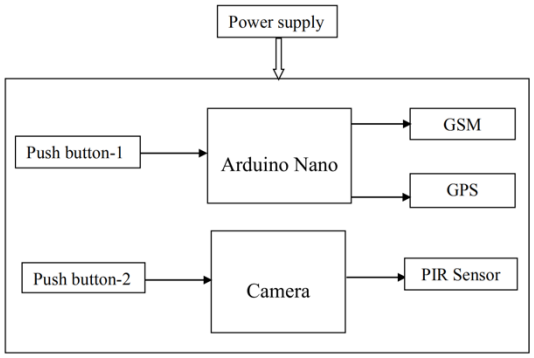
2. LITERATURE SURVEY

Maya Nayak, Prasannajit Dash [1] proposed a system, Women safety application using android mobile. Today there is many cases which are happening about women. It was high time where women needed change. This project is based on women security where women feel protected. This paper describes about safety electronic system 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.

TumanPoddarRitesh C, Nagaraj Bharath [2] designed a system which provides security for the women in case of any harassment. It consists of a circuit which has two modes of operation, firstly by using the emergency switch and secondly by using an alternative method of strain wire. Many women are afraid to be alone in public places due to fear ofbeen harmed. This fear has been caused by repeated cases of violence towards women. Women's empowerment in the country can be brought once their safety and security is ensure, either it may be at home, public places or during traveling. Many attempts are made to make women journey safer.

Swapnali N. Gadhave, Salome N Shinde, Prof Amol C Bhosale [3] designed a system which provides unfired combination of wearable jacket and mobile technology for safety of women in the safety. This system helps to alert family members and people closest to the victim by using buzzer, GPS, GSM module. Day by day the attacks on women are increasing and, in some cases,, she is not even able to take her mobile and dial up to police, family members, this system will help women in such cases to inform about attacks and also in giving her exact location to nearby police station for necessary action. In this we present an undefined combination of wearable jacket at optimum result with minimum mobile technology, to help the victim in any kind of an emergency situation. This application gives the security system which is designed to help women to do their work with comfort and can go to the places they wanted and work with comfort.

3. BLOCK DIAGRAM AND ITS DESCRIPTION



ARDUINO NANO

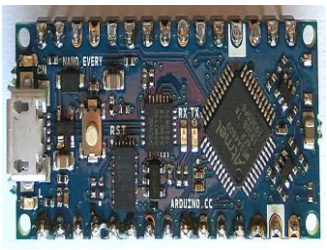


Fig1: Arduino nano

The Arduino Nano is a small, complete, and breadboard-friendly board based on the ATmega328P; it offers the same connectivity and specs of the Arduino Uno board in a smaller form factor. The Arduino Nano is programmed using the Arduino Software (IDE), Arduino.cc's Integrated Development Environment common to all our boards and running both online and offline.

ESP32 CAMERA

The ESP32 CAM WiFi Module Bluetooth with OV2640 Camera Module 2MP For Face Recognition has a very competitive small-size camera module that can operate independently as a minimum system with a footprint of only 40 x 27 mm; a deep sleep current of up to 6mA and is widely used in various IoT applications. It is suitable for home smart devices, industrial wireless control, wireless monitoring, and other IoT applications. This module adopts a DIP package and can be directly inserted into the backplane to realize rapid production of products, providing customers with high-reliability connection mode, which is convenient for application in various IoT hardware terminals.

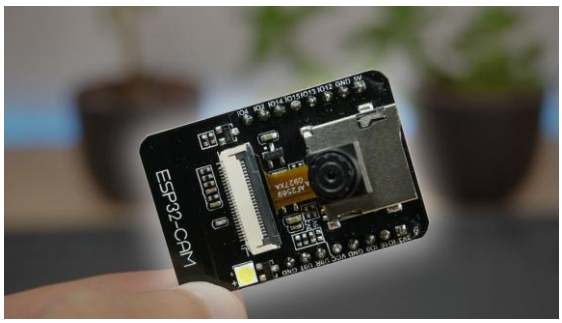


Fig2: CAMERA

GPS

The Global Positioning System (GPS), originally NAVSTAR GPS, is a satellite-based radio navigation system owned by the United States government and operated by the United States Space Force. It is one of the global navigation satellite systems (GNSS) that provides geolocation and time information to a GPS receiver anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. Obstacles such as mountains and buildings block the relatively weak GPS signals.

Fig3: GPS

GSM

This GSM modem is a highly flexible plug and play quad band SIM900A GSM modem for direct and easy integration to RS232 applications. It Supports features like Voice, SMS, Data/Fax, GPRS and integrated TCP/IP stack. To be connected to a cellular network, the shield requires a SIM card provided by a network provider. Here through this GSM, the details of the amount which are being detected in the RFID card will be sent to the user. Also the available balance will be known and recharge facility for the card will also be provided through a network.

Fig4: GSM

PIR SENSOR

A PIR sensor can detect changes in the amount of infrared radiation impinging upon it, which varies depending on the temperature and surface characteristics of the objects in front of the sensor. When an object, such as a person, passes in front of the background, such as a wall, the temperature at that point in the sensor's field of view will rise from room temperature to body temperature, and then back again. The sensor converts the resulting change in the incoming infrared radiation into a change in the output voltage, and this triggers the detection. Objects of similar temperature but different surface characteristics may also have a different infrared emission pattern, and thus moving them with respect to the background may trigger the detector as well.

Fig5:PIR SENSOR

PUSH BUTTONS

A push-button or simply button is a simple switch mechanism to control some aspect of a machine or a process. Buttons are typically made out of hard material, usually plastic or metal. The surface is usually flat or shaped to accommodate the human finger or hand, so as to be easily depressed or pushed.

Fig6: Push button

4. FLOWCHART

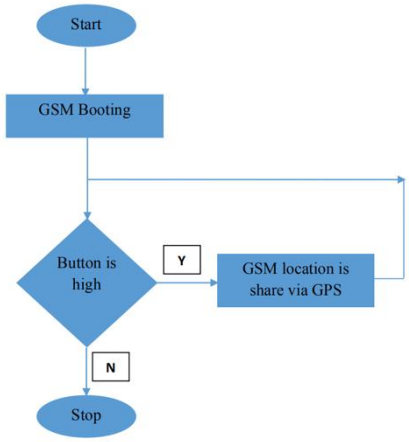


Figure 3.1.2: Flow chart of Interfacing GPD, GSM and Arduino Nano

5. RESULT

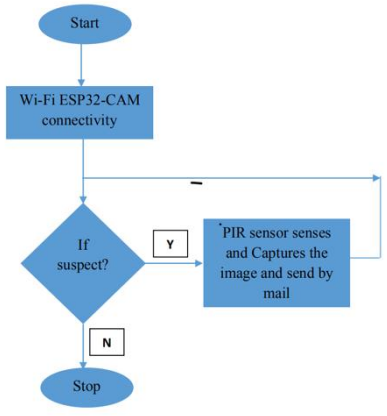
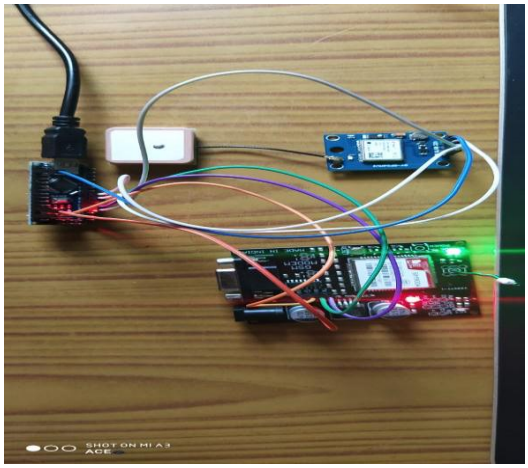


Figure 3.2.1: Flow chart of Interfacing ESP32-CAM and PIR Sensor.



By this method the medicines dispenses through dispenser box by selecting the appropriate medicines with keypad which will be displayed on the LCD, swipe the RFID card, later amount will be deducted from RFID card and the deducted amount message is sent to the user through GSM, this vending machine is used for time relief.

6. APPLICATIONS AND ADVANTAGES

6.1 APPLICATIONS

- It will be used for Safety of women, elder and physically challenged people.
- It will be used for child/kids tracking during traveling to school or colleges.
- It will be used in vehicle tracking and safety system where the location of the vehicle can be traced.
- Used as legal evidence of crime with exact location, video and photo information for identification of criminal.
- Used in security appliances.

6.2 ADVANTAGES

- It is safe and easy to use.
- It reduces man's effort in finding the criminal.
- Quick response built in low cost.
- High accuracy in location and images.
- Simple in design.
- It is more reliable.
- Alert message to mobile phone to the predefined numbers.
- Mobile numbers can be changed at any time.
- Can be used to prevent incidents.

CONCLUSION

The different modules used in the system are combined to develop Women Security Jacket. This system makes use of GSM and GPS module which is used to send emergency message along with current longitude and latitude value to stored contacts. On detecting violence situation, the system may be activated by simply pressing a switch.

The ultimate aim of this project is to protect the women from dangerous situations like kidnapping, harassment etc.

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