

# 'KAVACH' - WOMEN SAFETY DEVICE WITH GPS TRACKING AND SMS ALERT

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**ABSTRACT** - This Project presents a women safety detection system using GPS and GSM modems. The system can be interconnected with the alarm system and alert the neighbors. This detection and messaging system is composed of a GPS receiver, Microcontroller and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude. The Microcontroller processes this information and this processed information is sent to the user using GSM modem. A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined mobile number. When a woman is in danger and in need of self-defense then she can press the switch which is allotted to her. By pressing the switch, the entire system will be activated then immediately a SMS will be sent to concern person with location using GSM and GPS.

**KEYWORDS :** Fingerprint module, Arduino UNO , GSM and GPS Module, Buzzer , ATmega328 microcontroller, Sensor etc.

## INTRODUCTION

Security is the condition of being protected against danger or loss. In the general sense, security is a concept similar to safety. The nuance between the two is an added emphasis on being protected from dangers that originate from outside. Individuals or actions that encroach upon the condition of protection are responsible for the breach of security. The word "security" in general usage is synonymous with "safety," but as a technical term "security" means that something not only is secure but that it has been secured. This project is designed with ATmega328. This Project presents a women safety detection system using GPS and GSM modems. The system can be interconnected with the alarm system and alert the neighbors. This detection and messaging system is composed of a GPS receiver, Microcontroller and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude.

The Microcontroller processes this information and this processed information is sent to the user using GSM modem. A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined mobile number. When a woman is in danger and in need of self-defense then she can press the switch which is allotted to her. By pressing the switch, the entire system will be activated then immediately a sms will be sent to concern person with location using GSM and GPS.

This project uses regulated 5V, 750mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V .

The microprocessor-based system is built for controlling a function or range of functions and is not designed to be programmed by the end user in the same way a PC is defined as an embedded system. An embedded system is designed to perform one particular task albeit with different choices and options.

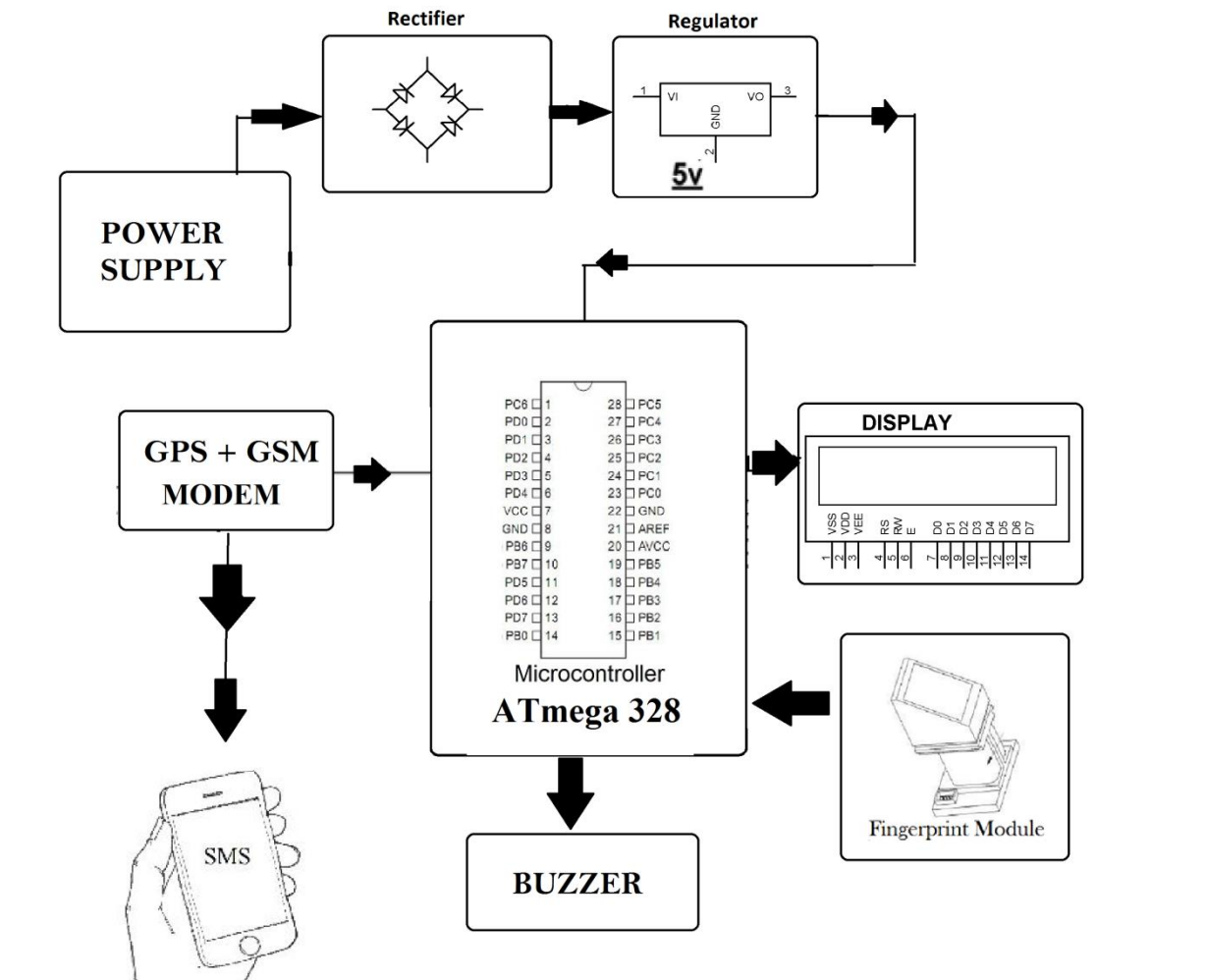
An embedded system is combination of computer hardware and software, either fixed incapability or programmable, that is specifically designed for particular kind of application device. Industrial machines, automobiles, medical equipment, vending machines and toys (as well as the more obvious cellular phone and PDA) are among the myriad possible hosts of an embedded system. Embedded systems that are programmable are provided with a programming interface, and embedded systems programming id specialized occupation.

As the number of powerful embedded processor in consumer devices continues to rise, the blue cat Linux operating system provides a highly reliable and royalty-free option for system designers. And as the wireless appliance revolution rolls on, web enabled navigation systems, radios, personal communication devices, phones and PDAs all benefit from the costeffective dependability, proven stability and full product life cycle support opportunities associated with blue cat embedded Linux. Blue cat has teamed up with industry leaders to make it easier

Design of industrial and process control systems know from experiencee that Linux works operating system provide the security and reliability that their industrial applications require. From ISO 9001 certification to fault-tolerance, secure portioning and high availability, we 've got it all. The advantage of our 20 years of experience with the embedded system. Now a day ' s embedded system widely using in the industrial areas to reduce to tike perform the particular task .This replacing the less work and also more efficient gives the accurate result.

**DESCRIPTION**

**BLOCK DIAGRAM**



**1.1**

**DESIGN OVERVIEW**

**POWER SUPPLY**

The primary function of a power supply is to convert one form of electrical energy into another and, as a result power supplies. In this project we have power supplies with +5V & -5V option normally +5V is enough for total circuit. Another (-5V) supply is used in case of OP amp circuit. Transformer primary side has 230/50HZ AC voltage whereas at the secondary winding the voltage is step downed to 12/50hz and this voltage is rectified using two full wave rectifiers .the rectified output is given to a filter circuit to filter the unwanted ac in the signal After that the output is again applied to a regulator LM7805(to provide +5v) regulator. Whereas LM7905 is for providing -5V regulation.

**LCD DISPLAY**

LCDs are available to display arbitrary images which can be displayed or hidden, such as preset words, digits and 7 segment displays as in a digital clock. They use some basic technology, except that arbitrary images are made up of a large number of pixels, while other displays have larger elements. A model described here is for its low price and great possibilities most frequently used in practice. It is based on the HD44780 microcontroller (Hitachi) and can display messages in two lines with 16 characters each. It displays all the alphabets, Greek letters, punctuation marks, mathematical symbols etc. In addition, it is possible to display symbols that user makes up on its own. Automatic shifting message on display (shift left and right), appearance of the pointer, backlight etc. are considered as useful characteristics.

**GSM MODEM**

Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication. GSM is the name of a standardization group established in 1982 to create a common European mobile telephone standard that would specifications for a pan-European mobile cellular radio system operating at 900 MHz.The basis of the GPS is a constellation of satellites that are continuously orbiting the earth. These satellites, which are equipped with atomic clocks, transmit radio signals

that contain their exact location, time, and other information. The radio signals from the satellites, which are monitored and corrected by control stations, are picked up by the GPS receiver. A Global Positioning System receiver needs only three satellites to plot a rough, 2D position, which will not be very accurate.

#### GPS MODULE:

GPS, in full Global Positioning System, space-based radio-navigation system that broadcasts highly accurate navigation pulses to users on or near the Earth. In the United States' Navstar GPS, 24 main satellites in 6 orbits circle the Earth every 12 hours. In addition, Russia maintains a constellation called GLONASS (Global Navigation Satellite System). GPS receiver uses a constellation of satellites and ground stations to calculate accurate location wherever it is located.

These GPS satellites transmit information signal over radio frequency (1.1 to 1.5 GHz) to the receiver. With the help of this received information, a ground station or GPS module can compute its position and time.

GPS receiver receives information signals from GPS satellites and calculates its distance from satellites. This is done by measuring the time required for the signal to travel from satellite to the receiver.

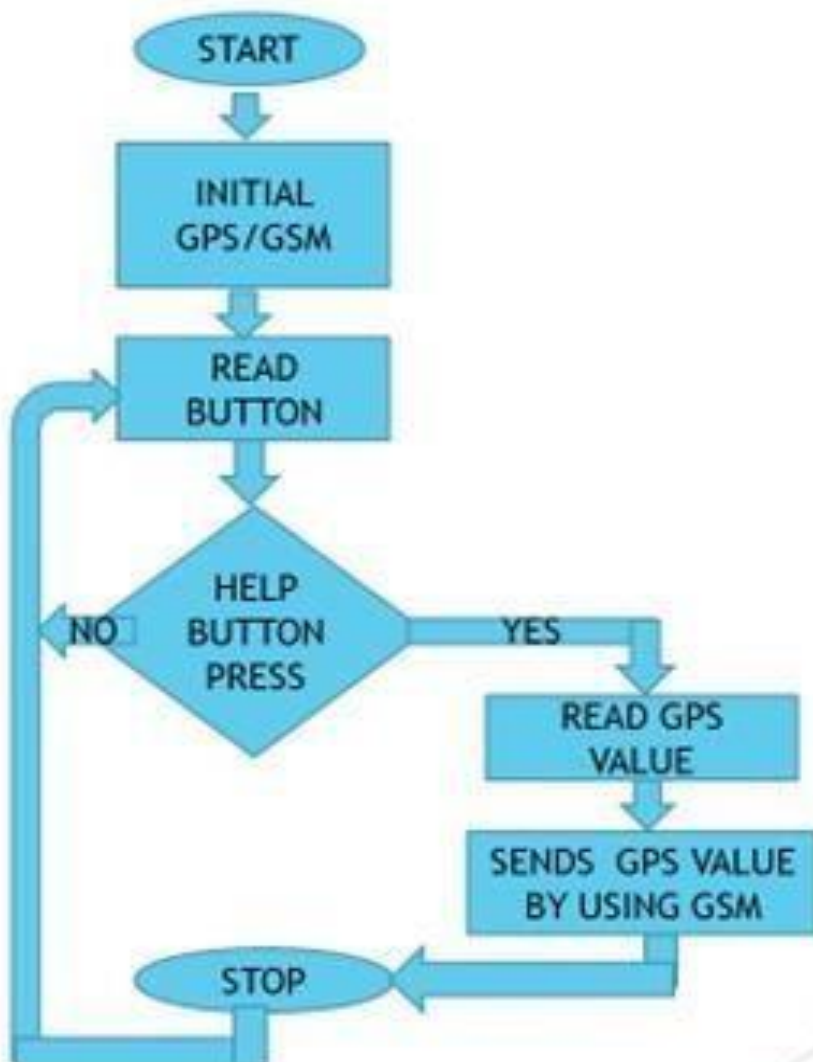
#### ATMEGA328 MICROCONTROLLER

The Atmel AVR® core combines a rich instruction set with 32 general purpose working registers. All the 32 registers are directly connected to the Arithmetic Logic Unit (ALU), allowing two independent registers to be accessed in a single instruction executed in one clock cycle. The resulting architecture is more code efficient while achieving throughputs up to ten times faster than conventional CISC microcontrollers. The ATmega328/P provides the following features: 32Kbytes of In-System Programmable Flash with Read-While-Write capabilities, 1Kbytes EEPROM, 2Kbytes SRAM, 23 general purpose I/O lines, 32 general purpose working registers, Real Time Counter (RTC), three flexible Timer/Counters with compare modes and PWM, 1 serial programmable USARTs, 1 byte-oriented 2-wire Serial Interface (I2C), a 6-channel 10-bit ADC (8 channels in TQFP and QFN/MLF packages), a programmable Watchdog Timer with internal Oscillator, an SPI serial port, and six software selectable power saving modes.

#### ARDUINO UNO BOARD

We will learn about the different components on the Arduino board. We will study the Arduino UNO board because it is the most popular board in the Arduino board family. In addition, it is the best board to get started with electronics and coding. Some boards look a bit different from the one given below, but most Arduinos have majority of these components in common.

#### FLOW CHART



## WORKING PROCEDURE

This project clearly uses two main modules of GSM and a microcontroller. The user when sends the messages through his phones those reaches the GSM ,through the AT commands all those messages reaches the microcontroller. That microcontroller takes the data in terms of bits through the Max232.Those information will be transmitted to the LCD display. This device is to be turned on in advance by a woman in case she is walking on a lonely road or some dark alley or any remote area. Only the woman authenticated to the devices can start the system by fingerprint scan. Once started the devices requires the woman to constantly scan her finger on the system every 1 minute, else the system now sends her location to the authorized personnel number through SMS message as a security measure and also sounds a buzzer continuously so that nearby people may realize the situation.

## APPLICATIONS:

- Security appliances.
- Safety of women.  
Used as a legal evidence of crime with exact location information for prosecution

## CONCLUSION

our effort behind this project is to design and fabricate a gadget which is so compact in itself that provide advantage of personal security system the emergency response system which is helpful for women in the incidents of crime. It is low cost system which can store the data of the members in the particular locality and provide immediate alert in case of crime against women. This provides women security. Being safe and secure is the demand of the device

This device is to be turned on in advance by a woman in case she is walking on a lonely road or some dark alley or any remote area. Only the woman authenticated to the devices can start the system by fingerprint scan. In this case even if someone hits the woman or the woman falls down and get unconscious, she does not need to do anything, the system does not get her finger scan in 1 minute and it automatically starts the dual security feature. This device will prove to be very useful in saving lives as well as preventing atrocities against women.

## FUTURE SCOPE

- 1.We can also interface this System with smartphone or Laptop.
- 2.We can use This device in Handbags, luggage, vehicle etc.
- 3.By Using nano size materials, the kit size get reduced.
- 4.Using wireless GPS module and Wireless panic Button the carrying of kit can be avoided.
- 5.This system is also can be interfaced with vehicle's Air Bag system.

## REFERENCES:

1. . A Car Test for the Estimation of GPS/INS Alignment Errors Sinpyo Hong, Man Hyung Lee, Senior Member , IEEE, Sun Hong Kwon, and Ho Hwan Chun IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS, VOL. 5, NO. 03, SEPTEMBER 2004.
2. Pantelopoulos A, Bourbakis NG. A survey on wearable sensor-based systems for health monitoring and prognosis. IEEE Transactions on Systems, Man and Cybernetics – part C: Applications and Reviews. 2010 Jan; 40(1):1–12.
3. Toney G, Jaban F, Puneeth S. et al. Design and implementation of safety arm band for women and children using ARM7. 2015 International Conference on Power and Advanced Control Engineering (ICPACE); Bangalore. 2015 Aug 12-14. P. 300–3.
4. Vigneshwari S, Aramudhan M. Social information retrieval based on semantic annotation and hashing upon the multiple ontologies. Indian Journal of Science and Technology. 2015 Jan; 8(2):103–7.
5. Chand D, Nayak S, Bhat KS, Parikh S. A mobile application for Women's Safety: WoS App. 2015 IEEE Region 10 Conference TENCON; Macao. 2015 Nov 1-4. P. 1–5.
6. Sethuraman R, Sasiprabha T, Sandhya A. An effective QoS based web service composition algorithm for integration of travel and tourism resources. Procedia Computer Science. 2015; 48:541–7.
7. Gowri S, Anandha Mala GS. Eicacious IR system for investigation in textual data. Indian Journal of Science and Technology. 2015 Jun; 8(12):1–7.
8. George R, Anjaly Cherian V, Antony A, et al. An intelligent security system for violence against women in public places.