

# Women Safety Night Patrolling Robot

Mandlik Sachin B., Bhadane Himanshu K., Tambe Saurabh S., Gunjal Yogesh S.  
Dept. of Electronics and telecommunications Engg., P.R.E.C Loni, Maharashtra, India

**Abstract**— In light of the present situation of the metro cities and other big cities, women security has emerged as one of the most important requirements in our country. In this world of advanced technology and smart electronics it is required to have a simple and cost-effective safety gadget that helps the victims during unforeseen dangers. This paper covers descriptive details about the design and implementation of prototype for an electronic gadget which has the potential to serve as a safety wear in the coming years. The device consists of a switch, Arduino Uno Board, GSM module (SIM900), GPS module (Neo-6M), buzzer, and pulse sensor (SEN-11574). The main working of this project is that anytime a woman senses danger, all she has to do, is to hold on the button of the device. Once the device is activated, it tracks the place of the women using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to already registered mobile number and the police control room. The pulse sensor checks the pulse of victim and in abnormal health situation the device also sends current GPS location to ambulance at every 10 sec in form of SMSs. The main advantage of this system is that this device small and easy to carry. The use of sophisticated components ensures accuracy and makes it reliable.

**Keywords**—Emergency Button, BUZZER, Shock Sensor, Security, Sensors, Etc.

## I. INTRODUCTION

In today's world, women safety has become a major issue in our country as women can't step out of their house at any time, especially during night. It is primarily due to fear of violence against them or being physically or sexually abused. The fear of harassment against women is not only the condition at outside but it may also happen at homes. Even in the 21st century where the technology is rapidly growing and new gadgets are being developed but still women and girls are facing problems. They often work across ethnic, religious, political, and cultural divides to promote liberty. We know that our society is all aware of importance of women safety, but it is also a duty of individual that they should be properly protected. Not only this, we must create such an environment in our society that women must feel secured outside their house even when they are alone at any time. Women are not so physically fit as compared to men so in case of a need a helping hand would be a boon for them. Vision robot Patrolling System The best way to reduce probability of becoming a victim of violent crime (robbery, sexual assault, rape, domestic violence) is to recognize, defense and look up resources to help you out of hazardous situations. If a women is in dilemma or get split from friends during a night out or someone is following with bad intention (sexual assault) or don't know how to find back residence then this device with her will guard her and bring assistance when she needs it by giving her current location and health conditions to her associates and control center through SMS and call. This device not only provides family and police support but also helps in getting medical support as fast as possible.

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## II. DETAILS DESCRIPTION AND IMPLEMENTATION:

The main purpose of our project is to provide security to the women from dangerous situations.

The microcontroller switch ON the buzzer present in the device so that nearby people may notice the critical condition and may come to rescue. And microcontroller sends the SMS of current location and pulse reading to the registered mobile number of the family member and police with the help of GSM module. The GSM sends the current location and other data at every 10sec so that if victim is changing its current location continuously then that can be easily traced by police. And this GSM module also calls the family member and police station. In case if the pulse reading also goes abnormal then the microcontroller command the GSM module to send the pulse reading by SMS and to call the ambulance so that the immediate medical help can be provided.

**Power Supply:** This block contains step down transformer, a bridge rectifier, a filter capacitor and a voltage regulator. Single-phase AC power supply from the mains is step down to lower voltage which is again rectified DC is filtered and regulated to circuit operating range with Capacitor and regulator IC respectively.

**Arduino Uno Board:** Arduino/Genuino Uno is a microcontroller board based on the atmega328p (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. You can tinker with your UNO without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.

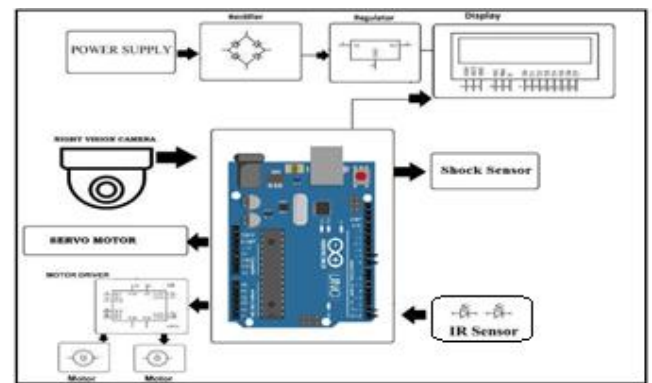
### III. PROPOSED PAPER

Autonomous security robots are a new groundbreaking innovation in advanced security and surveillance technology. Guards patrolling an area with flashlights and batons never worked very well; however, today there is an immergence of smart security systems with intelligent sensors, embedded systems, autonomous control mechanism and mobile application. The first security surveillance robot was proposed by Everett, H. & Gage, D.W, 1999 in "Mobile Detection. Assessment and Response System (MDARS)". Since then security robots have become a growing interest with increasing developments in research and application. Yoichi Shimosasa et al., combining security surveillance and service system together, developed an autonomous guard robot which can guide visitors in daytime and patrol at the night [2]. A team of intelligent mobile security robots patrols different floors of a building. During the occurrence of an abnormal event, the mobile robot transmits the relation location (floor number) of the event to the supervised computer [3]. An automatic patrolling vehicle acts as a security patroller in the security system, which can monitor those dead zones of the traditional fixed surveillance system. The remote monitoring capabilities can also be enhanced by using the wireless network. And the face detection system is adapted to record and analyse the invaders [4]. Countless applications today are using of mobile service security robots, including autonomous navigation, security patrolling, housework, search-and-rescue operations, material handling, manufacturing, and automated transportation systems. Regardless of the application, a mobile robot must use a robust autonomous navigation system.

Recently, security robots are being marketed commercially. Knightscope's robot security guards, an advanced physical security robot which patrols parking lots, offices and even outdoors. Also, emerging social robots like Buddy, Personal Robot, Riley and Aido also features home security patrolling.

While several research and implementation of security robots are available, the technology used in security robots reduces its affordability. To solve this problem, the paper proposes a low-cost autonomous mobile security robot based on a multisensory system that is user friendly and is also affordable. The intelligent security patrol robot is implemented using mobile application. The robot is mobile and provides fully autonomous patrolling in a defined area. It has a multisensory monitoring system with 6 sensors. This also make the robot versatile, such that it can be used for both patrolling and also for alerts depending on user choice. Whereas many of the devices serve only one purpose. It also provides 4 kinds of alarming systems via which notification of security violation is sent.

### IV. BLOCK DIAGRAM



### V. HARDWARE DESCRIPTION

#### A. Microcontrollers:

It is a microcontroller of AVR family based on the ATmega328. It has total 28 pins having 14 digital input/output pins, 6 analog inputs/output, a 16 MHz quartz crystal is used to provide external clock to microcontroller, 2 VCC pins, 2 GND pins, 2 XTAL pins used for the crystal oscillator. USB connection for program burning process, a power jack is also available, for external power supply and a pin 1 has a reset function. It contains everything needed to support the microcontroller; simply connect it to a computer through a USB cable or battery to get started. The Arduino Uno differs from all preceding. USB-to-serial driver chip. 1 analog reference pin also available. It features the Atmega328 is simple to use, easy to handle, reliable, programmed as a USB-to-serial convertor.

#### B. camera ov7677:

- Optical size 1/6 inch
- Resolution 640×480 VGA
- On-board regulator, only single 3.3V supply needed
- Standard 0.1 inch (2.54mm) pin pitch header connector
- Mounted with high quality F1.8 / 6mm lens
- Output support for Raw RGB, RGB (GRB 4:2:2, RGB565/555/444), YUV (4:2:2) and YCbCr (4:2:2) formats
- High sensitivity for low-light operation
- Low operating voltage for embedded portable apps
- Standard SCCB interface compatible with I2C interface
- Supports image sizes: VGA, CIF, and any size scaling down from CIF to 40×30
- VarioPixel® method for sub-sampling
- Automatic image control functions including: Automatic
- Band Filter (ABF), and Automatic Black-Level Calibration (ABLC)
- Image quality controls including color saturation, hue, gamma, sharpness (edge enhancement), and anti-blooming
- ISP includes noise reduction and defect correction
- Supports LED and flash strobe mode
- Supports scaling
- Lens shading correction
- Flicker (50/60 Hz) auto detection
- Saturation level auto adjust (UV adjust)

- Edge enhancement level auto adjust
- De-noise level auto adjust

### C. Shock Generator:

This amazing little shocker is very tiny and can be hidden almost anywhere and give someone a surprise shock! It can be operated by almost any 1.5v batteries! So, on this intractable, I will show you how to make shockers that is smaller than a penny! However, the biggest disadvantage of this shocker is, it is very hard to build, but it may be easy for experienced soldering iron user (like me) to build the shocker...Please note that I am only 15 years old and I am not very good at grammar so if you find some parts of the intractable confusing, please let me know and I will try fix it. And excuse me for some of those blurry and hazy picture. I cannot make them better...

### D. Relay:

The 12 V solid state relay is used. When the controller scans the high data through the input channel, it sends the high signal to relay to switch ON 230 V ac supply voltage. Relay are simple switches which operate electrically. Relay consists of an electromagnet and also a set of contacts. The switching mechanism is carried out with help of the electromagnet. We used a 12 v single pole double throw relay.

### E. LCD (Liquid Crystal Display):

LCD display operates on 5V DC supply. It can display 16 characters per line and there are two such lines. It has two registers namely command and data. LCD shows the current status of the soil moisture and we can set the values for sensors in LCD. Here used LCD display is 16\*2 type. It has a 16 pins 8 data pins.

## VI. SYSTEM ARCHITECTURE DIAGRAM



## VII. ADVANTAGES

1. It is an all-in-one system. Hence no need to carry multiple devices.
2. GPS tracking feature tracks the user lively when you are the move after triggering the emergency button.
3. The second distinct feature is, it also detects the hidden cameras which help in our privacy.
4. This device works without internet connectivity.

5. Consistence of Performances.
6. 24/7 Continuous working.

## VIII. DISADVANTAGES

1. High cost.
2. High Standard Maintenance Required.
3. When Computer Systems Failure Will Cause Breakdown.

## IX. APPLICATION

1. It is used for safety of women.
2. It can also be used for child tracking during school time.
3. It can also be used as a vehicle tracking system.
4. It Can Used In Military Application.

## X. RESULT



## XI. CONCLUSION

The proposed design will deal with critical issues faced by women during night and provide security with advanced technology. While the society may or may not change its mind set but this device will help to feel women independent.

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