

Application of RF Transmitter and Receiver in the Development of Footwear for Women's Safety

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ABSTRACT

The world is becoming more unsafe for women. The recent incident in Maharashtra 8-month pregnant women Gang-raped by 8 men. Rape is the fourth most common crime against women in India. Crime rates in India-2018-sexual violence in India. The highest crime rate was reported in Pondicherry (447.7%), Kerala (312.5%) Kolkata (71.0%) and Madurai (206.2%) West Bengal (79.0%) Tamil Nadu (227.6%). The crimes against women are increasing at a higher rate. The employed women are feeling unsafe due to increasing crimes. In case of emergency situations woman will press an emergency button using wireless technology in RF, which will activate the GPS for location tracking and a SMS is sent to the police and family members of woman along with time. This proposal document describes a quick responding, cost protection system for an individual and especially for women using which a woman in distress can call for help just with the press of a button on this Smart gadget. Self Defense System for women safety is like a Safety Shoes for Women. It has the ability to help women with technologies that are embedded into a compact device. The women wearing this device as a Shoe, in case of any harassment or when she finds that someone is going to harass, she presses a switch that is located on the Shoe when the woman has fallen the information about the attack along with the body posture and location information is sent as SMS alert to a few predefined emergency numbers and soon help is on its way! The system will consist of embedded hardware and software co designed for this dedicated application. The system allows for knowing exact location of the individual, as soon as the trigger key on the button is pressed. By providing the instant location of the distressed victim to the police so that the incident could be prevented and the culprit apprehended. Then this system responds to such request by sending back a SMS containing location information in terms of Latitude and Longitude. Weapons also inside the women's shoe, so she can protect herself.

I. INTRODUCTION

When we look at 40,000 Years ago, humans had already developed the need to protect their feet from the elements. It took centuries, however, until the tasteful shoes of today were developed. The shoes

uppers were made of deerskin, the insides of the shoes were made of woven linden bast, the cushioning and isolating layers were made of grass fibers, and the soles were made of bearskin. The footwear was estimated to be roughly 5,300 years old. Different climatic regions required different kinds of footwear,

from animal furs wrapped around the feet and calves to palm leaves bound beneath the foot. These kinds of early shoes offered protection from the cold and heat, respectively. In cold regions inventions like these were the predecessors of boots, whereas in hot regions they served as the prototypes for sandals. As such, shoe development was strongly influenced by respective conditions. Mass migration from the (3rd to the 6th centuries) and the Crusades (of the 11th through 15th centuries) enabled the combination of different footwear fashions. Much of the footwear available today is clearly influenced by the footwear of the past; shoe history lives on. Shoe making, shoe construction and shoe production methods have hardly changed since the 19th century. The only aspect of shoe production that has drastically changed is tanning. That which humans sought to achieve in prehistoric times taken for granted today. Modern women's shoes made of premium leather last a very long time when treated with the proper care. They also promise a perfect fit, which in turn helps wearers maintain healthy feet. The common types of women's footwear are mentioned below

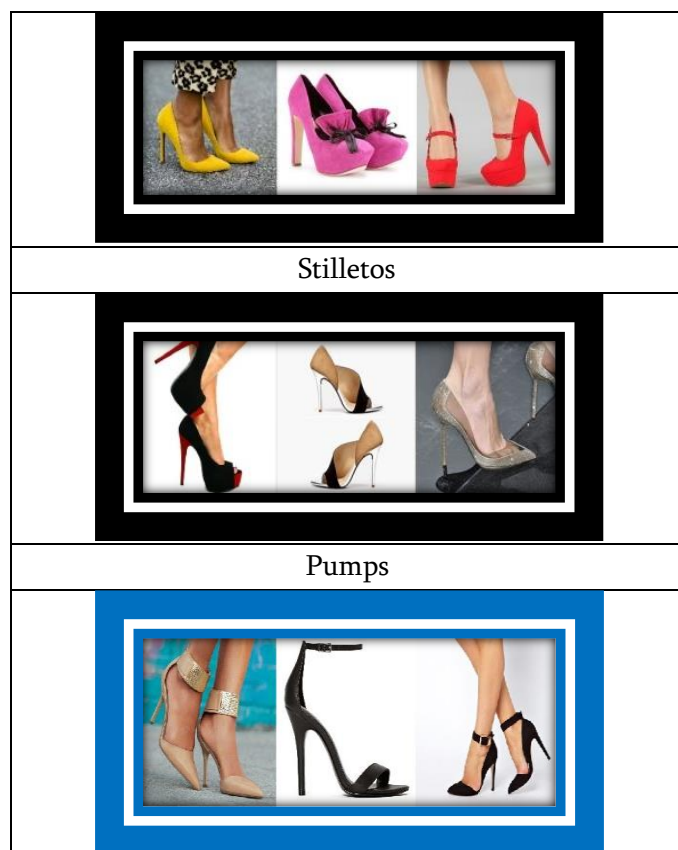


II. MATERIALS

Modern footwear is usually made up of leather or synthetic, and rubber material. In fact, leather was one of the original materials used for the first versions of a shoe. The soles can be made of rubber or plastic, roman sandals had sheets of metal on their soles so that it would not bend out of shape. More recently, footwear providers like Nike, have begun to source environmentally friendly materials. The other important materials used in the footwear fabrication is

Table 1-Materials used in this development

Description	Material
Style name	Open High Heel
Upper Leather	Sheep softy Nappa Leather
Lining Material	Goat Lining Leather
GPS System	RF Transmitter and receiver
Back Counter Type	Back strap
Accessories	Gun Metal
Insole Material	Micro cellular Rubber
Threads	Polyester(Tkt-120)
Adhesive	Synthetic rubber solution
Out sole	PVC wedge



III. RESEARCH METHODOLOGY

Safety footwear designing work proposed device is more like a safety system in case of emergency. This device fitted in a leather shoe. It is an easy to carry device with more features and functions. The emergency push button is held to one of the buttons of the in our hand. The main purpose of this device is to intimate the parents and police about the current location of the women's. A GPS system is used to trace the current position of the victim and a GSM modem is used to send the message to the pre defined numbers. There are several applications that reduce the risk of sexual abuse by sending SMS but in this model we also provide a weapons and Buzzer sound which is more useful for women. In this development the GPS system is placed in the wedge heel. The conventional steps in the footwear making are mentioned in the below chart.

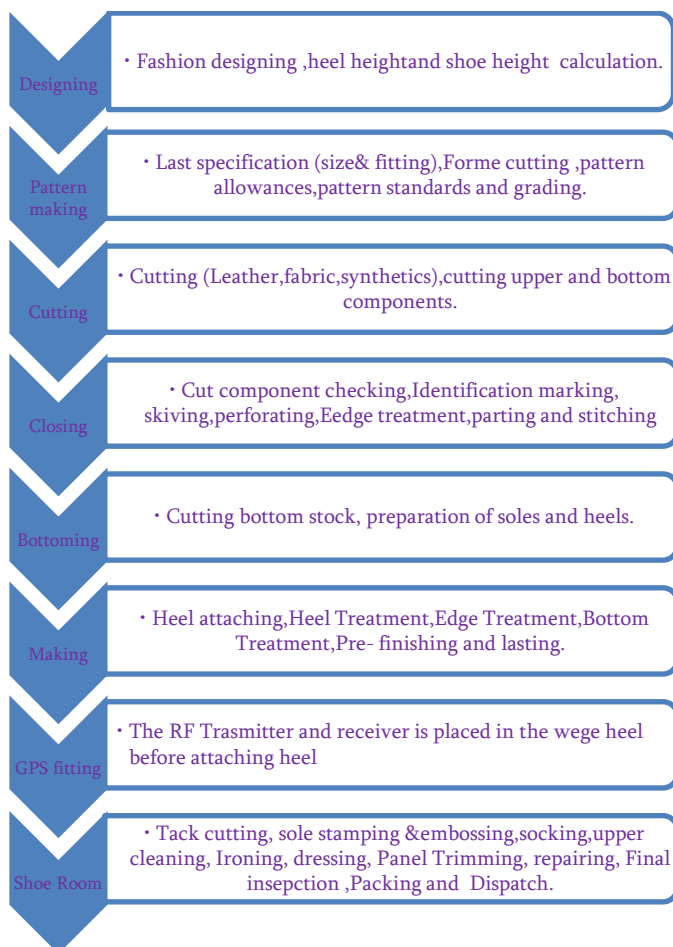


Figure 2-Flow diagram of this work

IV. WORKING PRINCIPLE of RF TRANSMITTER AND RECEIVER

The main purpose of our project is to provide security to the women from dangerous situations. This device consists of a key or button which can be pressed by the women when she is in need or when she feels insecure. As the switch is pressed by the women the microcontroller gets the command and it takes the current latitude and longitude value of the victim with the help of GPS module. 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 to the registered mobile number of the family member and police with the help of GSM module. The GSM sends the current location.

4.1 EXISTING SYSTEM

- In existing system only tracking is available
- Controlling system is not provided

4.2 PROPOSED SYSTEM

- The proposed system contains RF transmitter and receiver is used
- We can send our location when there is an emergency situation

The module can be fitted in our shoe

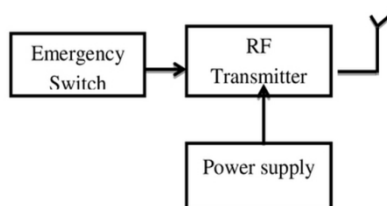
4.3 RF Transmitter and Receiver:

The TX is an ASK transmitter module. The TX is designed specifically for remote-control, wireless mouse and car alarm system operating at 315/433.92 MHz. The RX is a miniature receiver module that receives On-off keyed modulation signal and demodulated to digital signal for the next decoder stage. The RX is designed specifically for remote-

control and wireless security receiver operating at 315/434Mhz. UART TTL o/p - Baud Rate - 4800.

- Ideal for 315/433.92MHz Remote Keyless-Entry Transmitter.
- SAW RESONATOR
- ASK Design
- Compatible with both RF 433/315 Mhz.
- Interface upto 8 bit data.
- UART TTL output.
- Package includes with RF Rx Tx.
- Indicating led.

Transmitter



Receiver

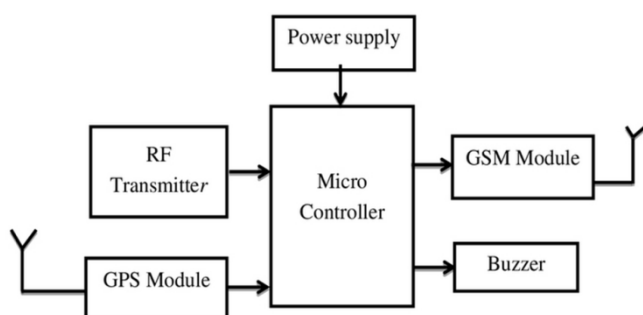


Figure 3-Flow diagram of RF transmitter and Receiver

4.4 Current Applications of RF Transmitter and Receiver

Currently the RF transmitter and receiver are used in

- Vehicle monitoring.
- Wireless meter reading.
- Industrial data acquisition system.
- Robot remote control.
- Wireless data transmission.

4.5 Pin Specification of RF Transmitter and Receiver

The pin specification of RF transmitter and receiver is mentioned in the below table 2

Pin	Name	Details
1	+5v	Power supply input
2	GND	Power supply ground
3-10	D0-D7	data
11	tx	transmitter
12	rx	receiver

Table 2-Pin Spec of RF Transmitter and Receiver

The RF module, as the name suggests, operates at radio frequency. The corresponding frequency range varies between 30 kHz & 300 GHz. In this RF system, the digital data is represented as variations in the amplitude of carrier wave. This kind of modulation is known as Amplitude Shift Keying (ASK). Transmission through RF is better than IR (infrared) because of many reasons. Firstly, signals through RF can travel through larger distances making it suitable for long range applications. Also, while IR mostly operates in line-of-sight mode, RF signals can travel even when there is an obstruction between transmitter & receiver. Next, RF transmission is more strong and reliable than IR transmission. RF communication uses a specific frequency unlike IR signals which are affected by other IR emitting sources. This RF module comprises of an RF Transmitter and an RF Receiver. The transmitter/receiver (Tx/Rx) pair operates at a frequency of 433Mhz. An RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected at pin4. The transmission occurs at the rate of 1Kbps - 10Kbps. The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter. The RF module is often used along with a pair of encoder/decoder. The encoder is used for encoding parallel data for transmission feed while reception is decoded by a decoder.

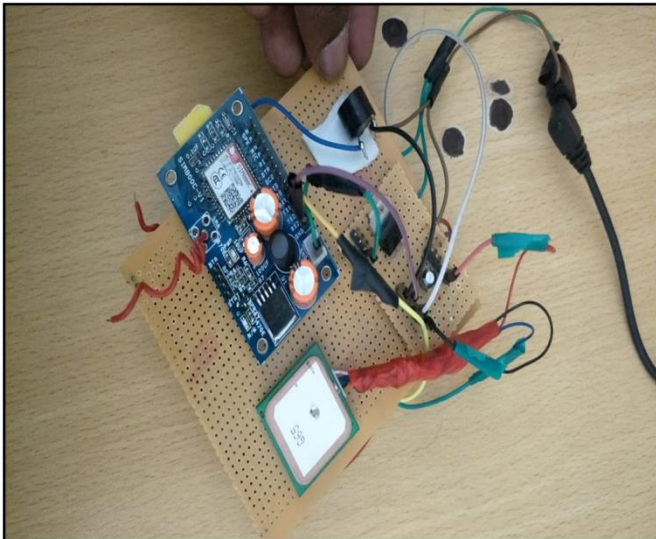


Figure 3-RF transmitter and receiver Kit used in this development

V. CONCLUSION

This paper reviewed the emergency response system which is helpful for women in the incidents of crime. The key objective is to develop a 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 day. 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. This device will probably be very useful for the women. It is certainly a short term and preventive solution. This will be proved as a multi-pronged strategy with the participation of multi stake holders of society. The creation of a hardware and software prototype has achieved two objectives: validation of the proposed architecture and checking whether the utilized technology is Appropriate for the system. This system will help its users in difficult situation. This system would be highly sensitive and easy to handle. Its quick action response will provide safety and security to individual user.



Figure 4-Photo of Final Product

VI. REFERENCES

- [1]. Poonam Bhilare¹ ,Akshay Mohite² ,Dhanashri Kamble³ ,Swapnil Makode⁴ and Rasika Kahane⁵ “WOMEN EMPLOYEE SECURITY SYSTEM USING GPS AND GSM BASED VEHICLE TRACKING” in international journal for research in emerging science and technology, volume-2, issue-1, january-2015
- [2]. H. A. Abdullah Dafallah “DESIGN AND IMPLEMENTATION OF AN ACCURATE REAL TIME GPS TRACKING SYSTEM” in e-Technologies and Networks for Development (ICEND), 2014 Third International Conference.
- [3]. P. A. Shinde ; ; Y. B. Mane ; P. H. Taranga “REAL TIME VEHICLE MONITORING AND TRACKING SYSTEM BASED ON EMBEDDED LINUX BOARD AND ANDROID APPLICATION” in Circuit, Power and Computing Technologies (ICCPCT), 2015 International Conference.
- [4]. FDDI ACKNOWLEDGEMENT BOOK .
- [5]. “chapter 5: Crime against women”, Crime in India 2012 statistics (PDF), National crime records Bureau(NCRB), Ministry of Home Affairs, Government of India , p. 81,archived from the original (PDF) on 16 January 2016

- [6]. "Table 5.1", Crime in India 2012 statistics (PDF), National Crime Records Bureau (NCRB), Ministry of Home Affairs, Government of India, p. 385, archived from the original (PDF) on 20 June 2014
- [7]. Bergstein .page 21.
- [8]. Bergstein. Page 20 to 22.
- [9]. Paradkar A, Sharma D(2015) All in one Intelligent Safety System for Security .International Journal of Computer Applications 130:33-40.
- [10]. Bhilare p, Mohite A, Kamble D, (2015g) Women Employee Security System using GPS And GMS Based Vehicle Tracking .International Journal for Research in Emerging Science and Technology 2:65-71.
- [11]. Mandapati S, Pamidi S, Ambati S(2015) A Mobile Based Women Safety Application (I Safe Apps). IORS Journal of Computer Engineering 17:29-34.

7.0 BIBLIOGRAPHY

1. [http:// lastmakingschool.com/ history-of-last making-. htm](http://lastmakingschool.com/history-of-last-making-.htm)
2. [https:// WWW.shoesofprey.com/content/bespoke](https://WWW.shoesofprey.com/content/bespoke)
3. <http://howdidiyoumakethis.com/diy-shoes-part-1-intro-supply-list/>
4. [http://www.craftyladyabby.com/2012/11/fashion-shoe-makeover-tutorials-paint. Html](http://www.craftyladyabby.com/2012/11/fashion-shoe-makeover-tutorials-paint.Html)
5. [http://angelusdirect. Com/collections/paint](http://angelusdirect.Com/collections/paint)
6. [http:// www.pinterest.com/artsyhick31/diy-decorating-shoes/](http://www.pinterest.com/artsyhick31/diy-decorating-shoes/)
7. <http://www.rei.com/learn/expert-advice/walking-shoes.html>
8. <http://www.news18.com>
9. [https://medium .com](https://medium.com)
10. <http://timesnownews.com>