Electronic ammunition for women safety and prevention

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Abstract: Women are afraid to walk alone at night or in strange locations because of the prevalence of female harassment in today's society. The study paper is built on developing a system that offers security to women whenever they need it, without having to wait for the police. The system essentially comprises of three components: a power circuit, a jacket, and a communication component. Two components make up a power circuit: a battery and a current circuit. A one-point five-ampere current output from the current circuit shocks the assailant. The proposed solution utilizes a single Android app, from which messages and real-time locations can be shared with family members. Calling capabilities are also included. The project's goal is to immediately offer safety to the woman and make it easier for her family and the police to get there.

Keywords— Bluetooth, Arduino, Jacket, Communication, Android App, Call, Shock.

I.INTRODUCTION

A nation can only flourish or become powerful if and only if a significant portion of its population is made up of women. Women today work in many different fields and contribute to the advancement of society and the country. Yet, one of the most urgent issues in the world now is the safety of women. You can increase a nation's power or development. A nation can only flourish or become powerful if and only if a significant portion of its population is made up of women. *Going anywhere new for work makes them feel uneasy. Women's crimes aren't going down; they just keep getting worse. The number of cases of rape, domestic violence, kidnapping, and molestation is increasing. A number of preventative actions have been taken by the government to reduce these crimes. In order to help women with protection, a number of helplines and emergency telephones are placed on roadways.*

All modern women own smartphones. So that they can get in touch with them if they sense any danger or unease. But it takes time because it can take the cops or some of her friends some time to get there. In order to give protection immediately, we therefore designed a system that will simultaneously enable communication and protect the user from an assailant by shocking him with electricity. We create a garment that has stitched-in copper tracks. The system is constructed with an Arduino microcontroller, a Bluetooth module (HC 05), a transformer, a battery, and some fundamental electronic parts. The technology operates in two distinct phases. The first phase involves manually turning on a jacket-internalized circuit. The next Android app is made to communicate messages and current locations while also controlling circuits. The system's main benefit is that all communication is handled internally between the phone and circuit, utilising Bluetooth rather than an external GSM module.

II.LITERATURE SURVEY

Embedded technology designed for women safety in 2021. The system employs sensors that are responsive to vibrations and pulse values. Messages and locations are sent via GSM modules [2].

B. Sathyasri, and others are working to protect women in 2019 by employing GPS and GSM modules to track their locations [10].

Using a camera to take pictures and videos, an electronic jacket for women's safety was designed in 2017. Moreover, for message sharing and location, a GSM module and GPS are used [17].

In order to safeguard women, a wearable jacket and an Android application were developed as part of the AVR Microcontroller base system in 2016 [18].

While the second module can be used in an emergency to notify your loved ones and the authorities so that aid can arrive, the first module can be used to film a little video to catch your attacker [15].

The objective of the presenters is to evolve a wearable safety gadget that automatically measures temperature and pulse rate while jogging. If the readings are higher than the expected range, more people will be contacted [16].

A woman travelling alone, in a remote area, or down a dark alley must turn on this gadget beforehand. [8].

According to the suggested system, it is possible to send messages to registered mobile numbers and track their current location using IOT and GSM modules [1].

The system's modules included GPS, GSM, and ARM controllers, and it was created to give women security through emergency messages and video-audio recordings with a hidden camera [3].

The proposed system will additionally include a GPS tracking system and share the current location with the main buzzer functionality [9].

The system might shock the attacker with an electric jolt and send messages to registered contacts with location sharing. [12].

The technology offers the ability to transmit messages, make automatic phone calls, record audio and video, and most importantly, detect intrusions and deliver electric shocks [20].

The application sends alerts to ladies using an Android handset. Also, it can track every moment and show friends, parents, and relatives the precise position. Our jackets can broadcast messages, provide locations, and activate shock circuits to hurt attackers using wireless technology. As a result, this method works well for both activity control and protection [4].

The shocker circuit, which is regulated by a relay, and immediate protection are both offered to the user by the buzzer. Using the Android app included with his mobile device, a user can use Bluetooth to communicate real-time location information to predetermined phone numbers [5].

An electronic jacket with a camera, a screamer sensor, a GPS tracker, and a shock ring may be used to activate this jacket's safety features while travelling late at night, while she's alone herself on the street, or in any circumstance where she might need to defend herself. [10].

Our suggested design will assist a girl when she reaches a dangerous area. She can protect herself in perilous circumstances, and this circuit will ease her anxiety while out alone at night, making sure she never feels helpless. [13].

The system's various components are put together to create a safety jacket for a lady. An emergency alert with the most recent longitude and latitude information is sent to specific recipients using the GPS and GSM modules. [7]

This technology can be used to track locations and transmit messages. It is advantageous for security reasons. An attack can be thwarted by using a shock circuit. As a result, it is employed for both protection and the regulation of other contemporary activities. There is an emergency buzzer. The entire network of tiny circuits is connected to this raspberry pi module. The suspect's pictures are also stored on the memory card. 14]

It is intended to help girls who are in danger. The circuit will enable her to flee quickly in an emergency and will help ease the anxiety of girls travelling alone at night so they won't ever feel helpless in a stressful situation. The criminal's face will be captured in the meanwhile so that the police can quickly grab him. [6]

The system is meant to keep women safe. With just one phone click, the system offers a variety of features. Any smartphone may readily download the application, allowing women to quickly receive assistance in dangerous circumstances. [19].

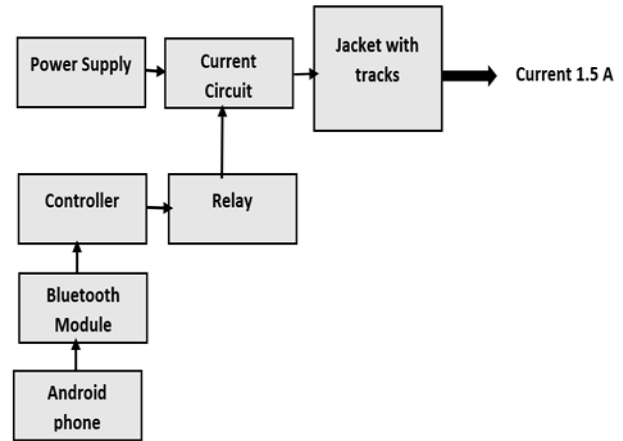The following table presents a tabular analysis of the literature.

Fig 1: Block diagram of system

III. METHODS

By using power circuitry that is inserted within the jacket to shock the attacker with an electrical shock of almost 1.5 A current, the method suggested in the study will defend the victim at any time or location. The style of the jacket ensures that it is cosy to wear. Once the Bluetooth connection between the system and the smartphone has been made, a communication and control facility is designed into an Android application. There are two ways to activate the jacket: first, by pressing the button on it, and second, by sending a command via an Android application after Bluetooth connectivity is established between the phone and system. The proposed solution needs a battery to power the circuit yet is completely

portable. Also, when a battery is discharged, a recharge facility is made available.

1. There are two ways to activate the jacket: first, by pressing the button on it, and second, by sending a command via an Android application after Bluetooth connectivity is established between the phone and system. The proposed solution needs a battery to power the circuit yet is completely portable. Also, when a battery is discharged, a recharge facility is made available.

2. SPDT: relays are used to switch between Arduino and the current circuit when a smartphone is used to manage the system.

3. Controller: The Arduino Uno is used to control system functioning and smartphone connection.

4. Bluetooth module: The HC 05 Bluetooth module is utilised for system-side connectivity. Bluetooth connecting between a system and a smartphone is necessary for proper smartphone use.

5. Smartphone application: from an app, you may carry out various tasks including phoning, messaging, and sharing your whereabouts. Every company's smartphone can run the application.
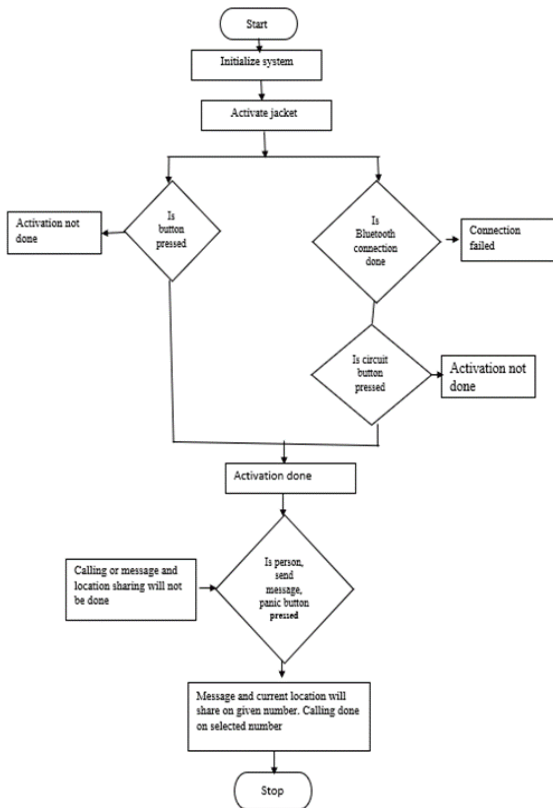
Following flowchart show flow of process

Fig 2: Flowchart of process

IV. RESULTS

1. Power circuit: The primary goal of our device is to protect women, thus we've included a power circuit that can generate a current of roughly 1.5 A, shocking the attacker severely with electricity. The fabric has copper tracks sewn into it (Jacket). Around 140 dc of electricity flows from this track. When an instruction from the app is given or the button is pressed, voltage will transfer on the rails, the jacket will activate, and current will begin to flow. The ideal outcome would be to have a constant voltage across the tracks, but due to the live operation, we have a live voltage that changes depending on the battery's charge. Despite this variation in output, we still have enough output current to shock the opponent.
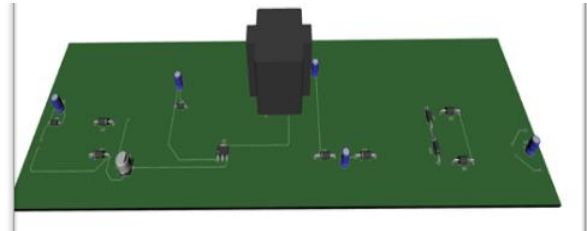

Fig 3: Power circuit PCB layout

2. Android app: Once a reliable Bluetooth connection has been made between the system and the smartphone, the Android app enables circuit activation or deactivation by simply touching a circuit button. By activating the GPS on a mobile device, a live location and a helpful message are sent with a chosen number.

3. Jacket: The current flow tracks are mounted on the jacket so that when a person touches the ground and the circuit is complete, they receive an electric shock and sustain injury.

with the recipient this will become an issue, but it will be at only sometimes as the wireless technology is developing rapidly so this will be also got solved

4. Control circuit: Using a relay, the main controller controls the switching application of the power circuit. Bluetooth module (HC 05) is utilised for all instructions and commands to be delivered and received between the controller and an android app. For power circuit switching, a relay is used, and it is controlled by Arduino via a mobile app as well as a physical switch.

5. The text message contains a location signal. The specified number receives a message with the precise and actual location value. Moreover, a simultaneous alert and support message is provided.

6. The ability to communicate location information through text message has the benefit of allowing for easy sharing of the location even when internet connectivity is unavailable.
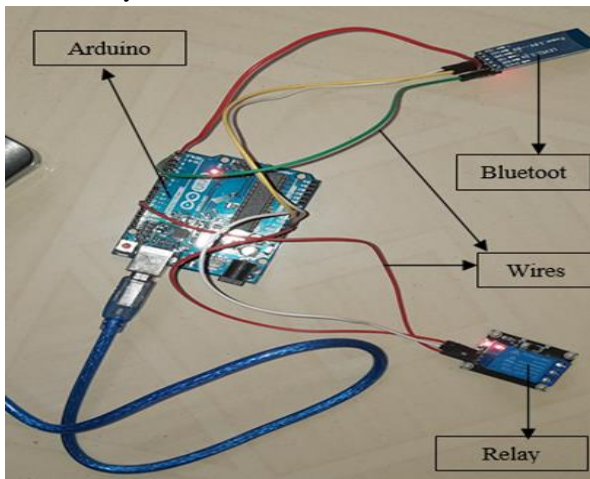

Fig. Control circuit

Power consumption

The proposed system uses relatively little electricity and produces the desired results.

Sr. no.	Components	Voltage	Current	Power
1.	Microcontroller	5V	8mA	40mW
2.	Bluetooth module (HC05)	3.3V	50mA	165mW
3.	Relay (on)	3.5V	63mA	221mW
4.	Other components	5V	7mA	35mW
5.	Total(working)	12V	200mA	2.4W
6.	Total(standby)	12V	150mA	1.8W

Table 1: Power consumption

Analysis

Women wearing safety jackets ought to feel secure while doing so. Because seeking treatment independently is essential if women are to avoid situations where they are not receiving the proper care. The number of instances involving women is growing yearly, but they frequently do not receive the justice they deserve. A number of international women had also complained to India about the safety issues. It is always preferable to prevent an incident from occurring. As a result, our system is capable of it; in other words, when the enemy tries to do something improperly, he will immediately become damaged.

He will be stopped by a current of approximately 1.5 A. Different activation techniques are also available from us. Since it is so helpful in emergency situations, people don't want to worry about it. It has been demonstrated that it lessens women's tension when they are alone or in similar circumstances. She will be able to live contentedly in the present day thanks to this jacket. Future research will aim to enhance the current system to reduce incidents.

V. DISCUSSION AND ACKNOWLEDGMENTS

Comparison based on selected parameter

We have made it a priority in our system to protect women's safety by not only educating the public but also standing up for herself when necessary. Our study explains how to seek for assistance and communicate. We attempted to create a defending shield using those analyses. All of the features and the protective shield that help the woman feel more secure on her own have been added.

The earlier versions of these systems relied on external GSM and GPS modules for connectivity, which will be more expensive and take up more room.

We interfaced our system with the phone's internal system and solved the expensive issue because we always have our handy mobile phone with us and it has GPS and GSM built in. Although the GPS technology on a mobile phone has excellent accuracy, there won't be a problem with transmitting the inaccurate location. Also, as the load on the controller diminishes, the consumption of external power also does so automatically.

VI.CONCLUSION

The protection of women, particularly in public settings while they are alone, is a key topic of this essay. Basically, the proposed method was created to address important

challenges that women encounter on a daily basis. Almost 63% of working women report feeling safe, according to an Indian survey. primarily in big cities where they have to work night shifts and are by themselves at night. When no one is around to assist them, the suggested system will unquestionably be of assistance to them. The programme will function as a self-defense tool for women. The various system elements are combined to create the e-women safety jacket. The emergency message will be sent by the system together with the longitude and latitude information saved in contacts using a GPS module. When such a dreadful or violent event is detected, the system can be engaged manually in an emergency circumstance or via an Android application. By clicking the person call button in the app, she can reach someone close to her right away. Circuit buttons engage circuits via apps, and Panic buttons activate circuits and transmit emergency messages to a single recipient. The project has been designed with the intention of providing a secure environment in all of these situations. No one would be able to tell if the system is a safety jacket or just a regular jacket because it is integrated into a jacket.

VII. FUTURE SCOPE

This study provides a system prototype that focuses on one of society's most pressing problems: the protection and safety of women. In addition, numerous modules and hardware components are displayed. The functionality of the product can be improved if new user requirements or technological advancements occur. Although the system is efficient and productive, it can always be improved. One enhancement might be the addition of a tiny camera that records the assailant's image and helps the victim make contact with others and gather evidence against the perpetrator. You need to take into consideration the primary school children's safety as a major issue for parents and teachers alike due to recent instances such as child abduction, disappearance, abuse, and kidnapping. While children are going between schools, this module keeps an eye on their safety. This module assists in keeping an eye on students' safety when riding in school buses, which is something parents worry about when their kids are at school.

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