

# SHAKTI-Women Safety Device

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**Abstract:** Over the past number of years, we have seen various forms of harassment, assault, and violence towards women. This has led to many deaths and suicides by women who have felt defeated or destroyed inside. The most pressing issue on this was the fact that there is no fear in the minds of the people who commit these disgraceful activities towards the woman, and there is no way for the woman to defend herself. While there are certainly some safety gadgets available, there are certain defects in them, like the bulkiness and the fact of carrying extra gadgets that are visible to the public makes the attack more planned or efficient, but it also makes them seem more vulnerable by themselves, leading to not using or carrying the device openly. That is why we have created small and efficient women's safety devices that are disguised as everyday wearables and jewellery. We have installed various devices and frameworks in everyday wearables, like GPS in necklaces, as in a lot of cases, the fact of not being able to call or get detected by authorities led to the loss of evidence by the time the victim was found. We also have an SOS signal sender framework that sends a distress signal to given phone numbers when used as a heart rate monitor in the bracelets to figure out the health conditions of the user. If the heart rate is higher, we can see if the user is in stress or tension, while a heart rate of zero would give an immediate sense of an attack happening. We also have a self-defence taser, which can be attached to a belt or kept in a purse and, from a distance, would look like an accessory, hence being concealed. We also have a voice recorder, which we can hide in any piece of jewellery or clothing, like a jacket, to retain crucial vocal evidence.

**Keywords – Women safety, jewellery, harassment & assaults, evidence,**

## INTRODUCTION

The objective of this project is to address the critical issue of harassment, assault, and violence against women by developing discreet and effective women's safety devices that seamlessly integrate into everyday wearables and jewellery to give women confidence and a sense of security. With a focus on enhancing personal security and providing immediate assistance in distress situations, the project aims to empower women to feel safer and more confident in their daily lives through innovative features like discreet GPS tracking in necklaces, an SOS signal sent to inform the family and authorities at the time of distress, and heart

rate monitoring bracelets to understand situations of emergency. The project enables swift and inconspicuous access to help, enhancing the chances of authorities intervening promptly and preserving crucial evidence. Additionally, the incorporation of a self-defence taser, designed to resemble an accessory, provides an effective tool for physical protection from attackers in close-quarter situations. A voice recorder is also designed to be able to preserve any vocal evidence. This project contains the following frameworks:

### 1)GPS Tracking Framework

### 2)Distress Signal sending Framework

### 3)Heart rate monitoring Framework

### 4)Self-defence Framework

### 5) Voice recording Framework

#### 1.1 GPS Tracking Framework – G.T.F

This framework is designed to give real time location of the user through WIFI using esp32 modules to the given numbers for detection of the location this also corresponds with the distress signal framework where it sends the locational coordinates when the signal is sent.

#### 1.2 Distress Signal Sending Framework – D.S.S.F

This framework is designed to send emergency signals to given mobile numbers at the time of emergency when a button is pressed twice this sends a signal through WIFI to given numbers like family members and authorities for emergency actions to take place.

#### 1.3 Heart rate Monitoring Framework – H.M.F

This framework is designed to monitor the heart rate of the user immediately after wearing, this also corresponds with the SOS signal framework as if the heart rate becomes 0 or reaches high peaks the system automatically sends SOS signals to the given mobile numbers with the heart rate and location.

#### 1.4 Self Defence Framework – S.D.F

This Framework is a different kind of framework as it actually helps defend the user from attacks as it contains a Taser which is concealed as an attachment for belts or be kept in purse for immediate access in case of close quarter combat.

### 1.5 Voice Recording Framework – V.R.F

We have built this framework to record and vocal audio or conversations that can be used as evidence in case of trials as an audio clip would be great asset in trying to prove a case about harassment or assault.

## 2. WORKING ON THE FRAMEWORKS

The working of all the frameworks has been explained below.

### 2.1 GPS Tracking Framework – “G.T.F”

This is one of the major components of Project as this system uses GPS (Global positioning system) technology to help and locate where the user is, this system uses esp32(NodeMCU) module to communicate with the devices as it is able to work independently without having rely on mobile networks and has a great range as it connects directly to the internet servers around the world which makes it to be able to give the location almost anywhere in the world making it a great asset this framework works as a GPS module gets the coordinates of the user through GPS satellites and relays it to the microcontroller and the microcontroller uses the esp32 module to send the location to the desired phone numbers which are programmed into the system.

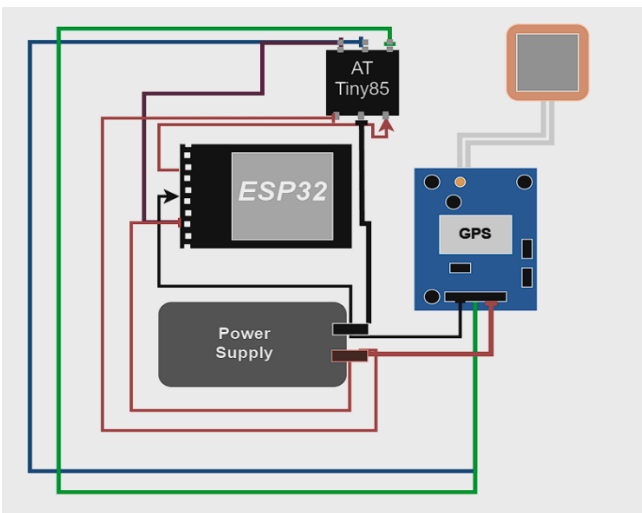


Fig -1: Block-Diagram for *GPS System*

In a nutshell, The GPS Tracking Framework will help in locating the user.

### 2.2 Distress Signal Sending Framework – “D.S.S.F”

This Framework is designed to send distress signals and messages to given numbers this system too uses the Esp32 module for better range and service. The way this framework works is in a given article of jewellery, say a necklace

a button would be given and when pressed twice the microcontroller will use the ESP module to convey a message to the programmed numbers and contacts a message like “I am In Danger” or “HELP ME” with the GPS coordinates and heart rate.

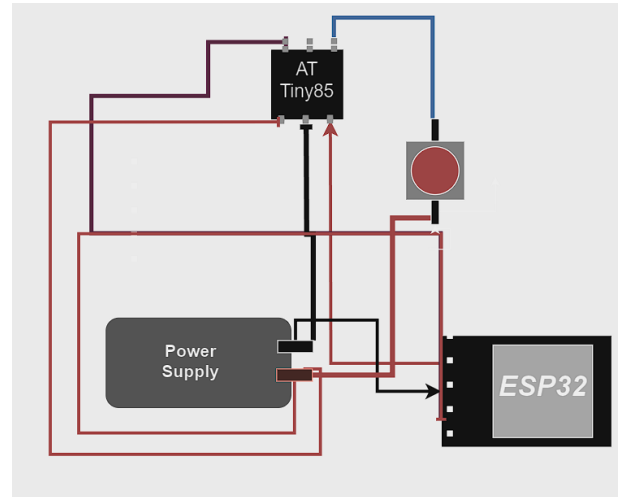


Fig -2: Block-Diagram for *SOS Signal Framework*.

In a nutshell, The Distress signal sending Framework or SOS Signal sending is designed to help the authorities or family members know if there is an emergency for the user.

### 2.3 Heart rate monitoring Framework

Another feature of this project is the Heart rate monitoring framework this feature works as an immediate response to any attack as this framework consists of a heart rate sensor which is in a bracelet and start to work as soon as the bracelet is strapped on by a custom switch we have placed on the bracelet which gets activated as soon as both sides of the bracelet come in contact the heart rate is monitored and stored in an excel file whenever there is a high spike, a big drop or the heart comes to zero the framework immediately send a message and alert to the given phone numbers and authorities via the SOS signal sending framework.

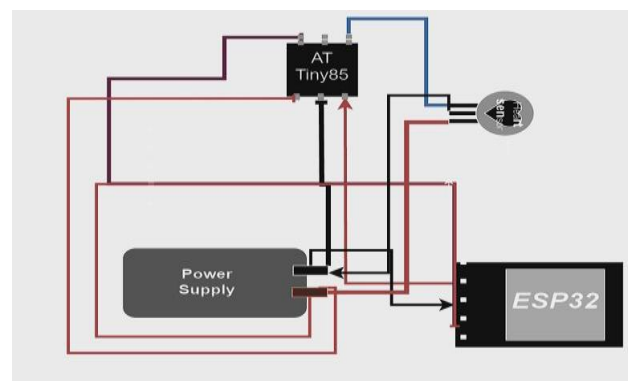


Fig -3: Block Diagram for *Heart Rate Monitoring Framework*

In a nutshell This framework detects whenever there is a massive disturbance in the heart rate and alerts the authorities and family of the user.

### 2.4 Self Defence Framework – “S.D.F”

This framework works in a different way than the other three frameworks we have discussed earlier this framework is not as a precaution or an action taken after any attack but it is to defend the user while the authorities or any kind of help approaches this framework consist of a small taser which can be easily disguised as an simple belt attachment or can be kept in a purse this framework consists of a high voltage transformer which converts the voltage of a simple rechargeable 9v battery to a pulsing 10000v electric impulse this temporarily contracts the muscles of the attacker giving the user an opportunity to escape.

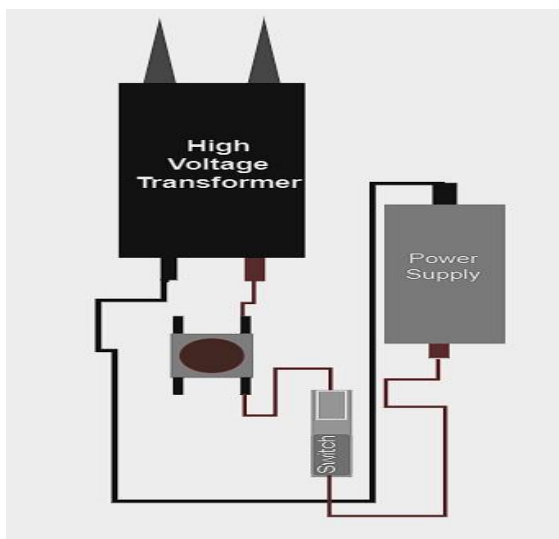


Fig -4: Block Diagram for *Self Defence Framework*

### 2.5 Voice Recording Framework – “V.R.F”

This framework is much different than any other framework as this helps in the evidence for the authorities as this helps in recording the vocal input from the surroundings as soon as it is activated how this framework works is by recording the vocal input and storing it as soon as there is a push of button by the user. This helps in any vocal or conservational evidence for the user.

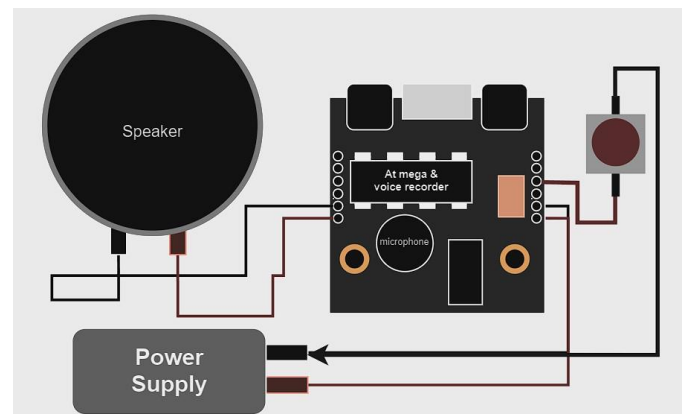


Fig 5: Block Diagram for *Voice Recording Framework*

### 3. Conclusion

So, our made project is specially designed to give confidence and a sense of independence and security to the women as well as lowering the number of deaths and mishaps of women because of assaults and violence towards women and this single project can make even if a small but a much needed dent in the number of mishaps regarding women related violence.

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**Prototyve Model**



**Fig -4.1:** Prototype Necklace



**Fig -4.2:** Prototype kit



**Fig -4.3:** Prototype taser.