

Protibadi_{Next}: A Low Cost Emergency Solution against the Perpetrators

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KEYWORDS: Sexual Harassment, Technology Solution, Wearable Solution.

INTRODUCTION:

Sexual harassment is an ongoing global problem that takes place in various regions. In developing countries, the problem of sexual harassment leaves the women in vulnerable position, mainly in the outdoor scenario and mostly at the night time. However, existing technologies requires a person to access the mobile phone during crisis situation and there is a very high chance that they will lose the phone. In our survey of 100 women, we found they (89%) do not want to bring out their phone on those times. So, overall, the scenario is very critical from their point of view.

MOTIVATION:

There are some commercial wearable solutions such as VIGILANT and REVOLAR [1, 2], that are expensive (40-60USD) considering a developing country like Bangladesh. To ensure women safety and for quick response we have designed and developed a low cost wearable hardware system that costs only \$5-\$6. This minimalistic hardware performs with a mobile phone application where hardware helps the app to send the text to the rescuers. We named this system as Protibadi_{Next}, the name means defendant in the Bengali Language.

SYSTEM ARCHITECTURE:

We were able to minimize the cost as we have used pure analog circuit in the circuit. We did not use any microcontroller or GPRS device and there is no need to code it. The system is explained below:

The system is provided in Figure 1. The wearable hardware consists of two key components: 1. a multi-vibrator circuit that provides a trigger, and 2. a communication module that sends a signal to a mobile app. We basically worked on the hardware design and tried to make it minimalistic.

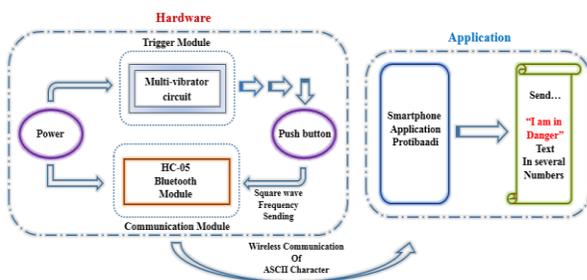


Figure 1: Block Diagram of the System

The multi-vibrator circuit is essentially a square wave generator with a push button. Upon pressing the button, the circuit will activate for a specified length of time and

generate a continuous square wave of a predetermined frequency that corresponds to an ASCII character, used as trigger for the mobile app. This ASCII combination is transmitted via a communication module (Bluetooth HC-05) to the mobile app and then the app sends a quick text with GPS location of the victim to the nearby rescue offices, relatives and also on Facebook timeline. This process has done without touching the mobile phone and when it is done by app, a notification light blinks to the hardware.

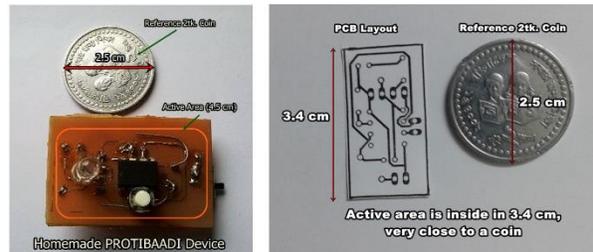


Figure 2: Homemade Representation of the Hardware.

First, we made above representation at which is slightly large from our local 2 Tk. coin (Right picture).

UPGRADE AND EVALUATION:

Our hardware is wearable and possible to use it as gadget. We did a survey about the way they want to see the device commercially, and we found that they want to put it on their wrist. That is why we upgrade our system according to the user study and second picture is the upgraded one.

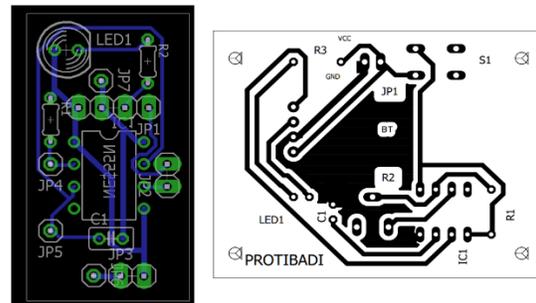


Figure 3: Layout Upgrade

CONCLUSION:

We present a relatively inexpensive wearable technology that is small and can take an emergency step to any perpetrator of sexual harassment or other crimes. With the correct packaging, the hardware can go through as a clothing accessory or an ornament. Though this solution is considered for women, anyone can use it as security gadget.

REFERENCE:

- [1] VIGILANT, <https://vigilantsolutions.com/>
- [2] REVOLAR, <https://revolar.com/product/revolar/>