

Emergency Alert System for Women using IoT

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Abstract - Every day, every woman, young girls, mothers and women from all walks of life are struggling to be safe and protect themselves from the roving gaze of the horribly insensitive men who molest assault and violate the dignity of women on a daily basis. An ages old practice is still continuing today in the form of harassment, blackmailing etc., Today cyber world or virtual world has opened up new ways to reach out the women attacked. The applications which are proposed has access to track location and will send the messages to the nearby police stations or family members and the scanned phone number. This application is not only used for cases like rapes and any perverts teasing girls but this also helps them from any bad condition or any health problem like fainting suddenly. This application helps women to overcome their fear in going out and do things what they like to do.

Key Words: Women safety, IOT, Smart watch, Emergency alert

1. INTRODUCTION

Over the last few decades, the status of women in India has undergone significant changes. To keep pace with the fast-paced life, women actively participate in the workforce, contributing to BPOs (Business process outsourcing), call centres, IT firms, and various other industries. Despite these strides, women in India continue to face numerous social challenges and are often victims of violent crimes. According to a global poll by Thomson Reuters, India ranks as the fourth-worst country in the world and is considered dangerous for women among the top 20 growing countries. The increasing incidents of attacks on women highlight a pressing issue where, in some cases, the victim may not even could reach for her mobile phone and contact the police. This security system aims to address such situations by allowing women to report attacks promptly and provide their exact location to the nearby police station for necessary action. The project is centered around creating a security system dedicated to ensuring the safety and security of women, empowering them to face social challenges without feeling helpless. It is a crucial step forward to provide women with the tools they need in times of distress.

When emergencies occur, women may find it challenging to protect themselves and operate smartphones. The complexity of setting up alert functions during high-risk situations, coupled with the immediate need to convey their location to the police and family members, presents a significant obstacle. To address this issue, our project proposes a solution that eliminates the need for complex smartphone operations during emergencies. We have developed a user-friendly system integrated into everyday items like a pull-over jacket and a ring. These objects serve as accessible interfaces for women to trigger an alarm and share their location promptly. By incorporating a straightforward switch mechanism on the jacket and ring, women can activate the

security system with ease, initiating a screaming alarm and an electrical shock mechanism for self-defence. Simultaneously, the system captures camera footage and transmits location details to emergency contacts and the nearest police station. This approach ensures that, even in high-stress situations where operating a smartphone might be impractical, women can quickly and effectively alert authorities and loved ones, enhancing their overall safety and security.

2. METHODOLOGY

The proposed system is a portable wristband-like device equipped with a panic button, a Realtek RTL8735B chip, an alarm, and a camera with GPS and Health Monitoring functionality. Upon pressing the panic button, the device activates within milliseconds and transmits the individual's location and captured images (including the surrounding environment) to predetermined emergency contacts and a designated server address. Additionally, the system offers real-time video transmission capabilities, potentially aiding in identifying the individual involved in the incident. Health Monitoring sensor continuously monitors and transmits the health parameters to the app. Application of IOT is as shown in Fig. 1.

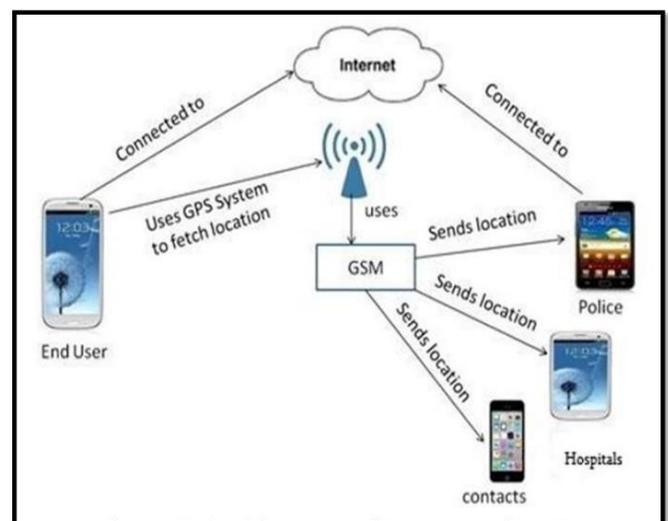


Fig. 1: Application of IOT

In the proposed system, we utilize the Realtek RTL8735B to capture video through a camera. The captured videos and images are subsequently transmitted to the Android application with the assistance of cloud servers. The cloud server collects data from the microcontroller and displays the video in the Android app. For tracking the victim's geo locations, we employ high-precision GPS modules in the industry, providing more accurate location details with minimal power consumption. The microcontrollers gather the victim's geo-locations, which are then transferred to the cloud servers of the Android app. The cloud server redirects this data to the Google Maps API, which then indicates the person's location using a

black location symbol. To monitor the health Max30102 Sensor is utilized to acquire different health parameters of the person it includes Oxygen Saturation, Body Temperature, Heart Rate data, all these data are collected and transmitted to the android app visualization and display. The block diagram of proposed model is as shown in Fig. 2 and the circuit diagram implemented in the project is as shown in Fig. 3.

outputs from anywhere (you just need Telegram and access to the internet). Installation of telegram app and creating details as shown in Fig. 4 and Fig. 5.

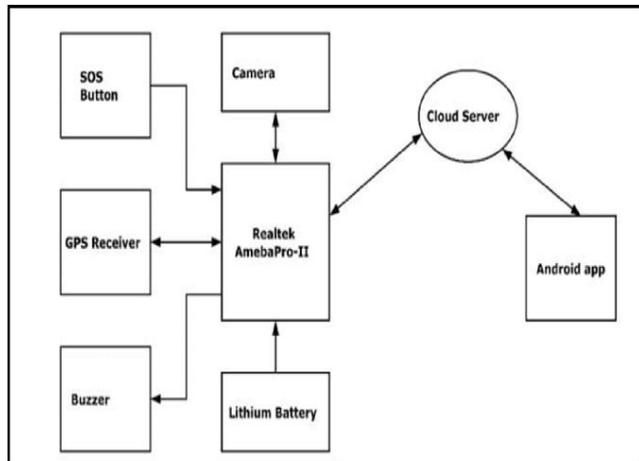


Fig. 2: Block diagram of the proposed model

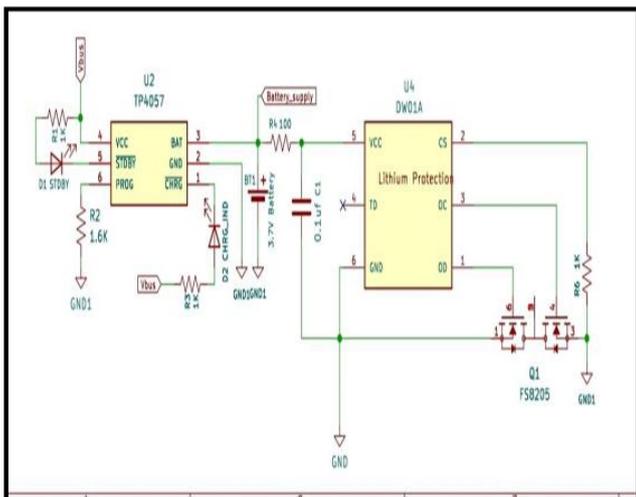


Fig. 3: Circuit diagram

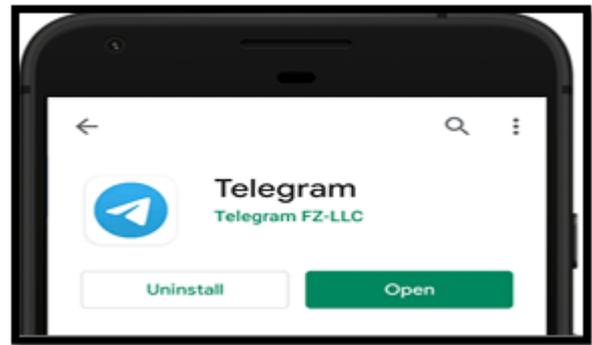


Fig. 4 : Installation of Telegram App

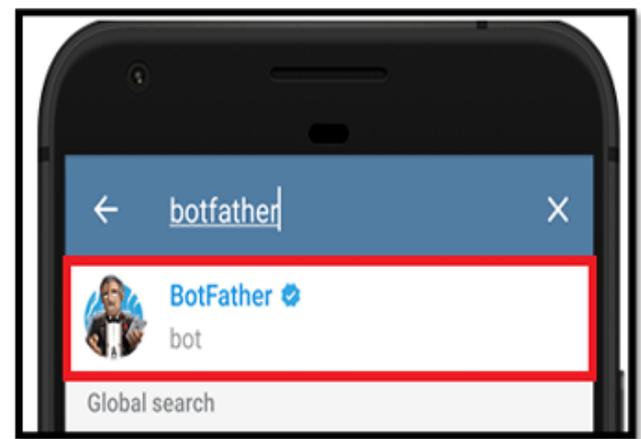


Fig. 5: Create a telegram Botfather group

3. SOFTWARE IMPLEMENTATION TELEGRAM

Telegram Messenger is a cloud-based instant messaging and voice over IP service. You can easily install it in your smartphone (Android and iPhone) or computer (PC, Mac and Linux). It is free and without any ads. Telegram allows you to create bots that you can interact with “Bots are third-party applications that run inside Telegram. Users can interact with bots by sending them messages, commands and inline requests. You control your bots using HTTPS requests to Telegram Bot API”. The ESP32/ESP8266 will interact with the Telegram bot to receive and handle the messages, and send responses. In this tutorial you’ll learn how to use Telegram to send messages to your bot to control the ESP

4. SYSTEM REQUIREMENTS AND SPECIFICATIONS

4.1 AMOEBA PRO 2 (Realtek RTL8735B) :

The Realtek RTL8735B (also named Ameba Pro-II) is a highly integrated low-power 802.11a/b/g/n Wireless LAN (WLAN) and Bluetooth camera SoC. It combines ARM v8M MCUs (500MHz and 2.23 DMIPS/MHz), WLAN MAC, a 1T1R capable WLAN baseband, Bluetooth MAC, RF, audio codec, ISP and H264/H265 encoder in a single chip. It provides useful high speed connectivity interfaces, such as USB 2.0 host, USB 2.0 device, SD host and Ethernet interfaces. It also provides a bunch of configurable GPIOs which are configured as digital peripherals for different application and control usage. The Ameba Pro-II series integrates internal memory for full Wi-Fi protocol functions. The embedded memory configuration also enables various application development. The Amoeba pro 2 as shown in Fig. 6.

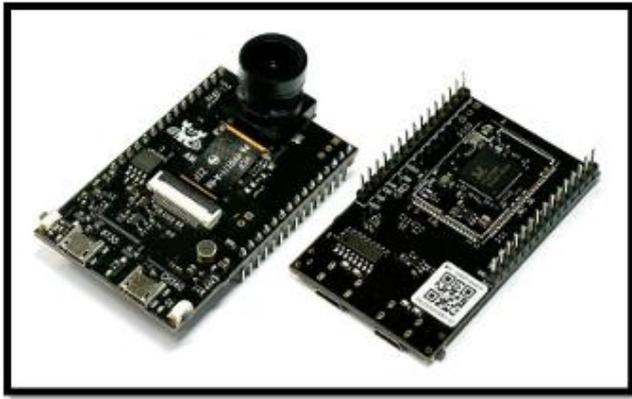


Fig. 6: AMOEBA PRO 2

4.2 PULSE OXIMETER AND TEMPERATURE SENSOR (MAX30102)

The MAX30102 is an integrated pulse oximetry and heart-rate monitor biosensor module. It includes internal LEDs, photodetectors, optical elements, and low-noise electronics with ambient light rejection. The MAX30102 provides a complete system solution to ease the design-in process for mobile and wearable devices. The MAX30102 operates on a single 1.8V power supply and a separate 3.3V power supply for the internal LEDs. Communication is through a standard I2C-compatible interface. The module can be shut down through software with zero standby current, allowing the power rails to remain powered at all times.

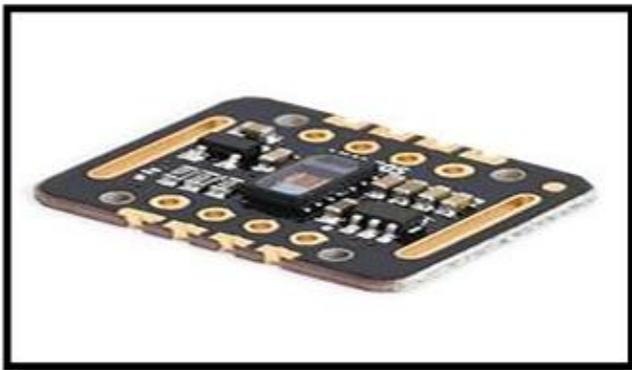


Fig. 7: Pulse Oximeter and Temperature Sensor

5. RESULT

The existing system is not powerful enough to prevent crimes against women's. The accurate tracking of sexual harassment facing by victims will be done. This project put forth a technique where a women's when in danger can instantaneously intimate to the concerned authorities. The proposed technique use GPS tracking of the smartphone to get the device's coordinates.

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