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An Innovative Wearable Device for Women Safety Using IBEACON Technology with BLE

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ABSTRACT
According to the reviews of WHO, NCRB-social-authorities employer 35%Women everywhere in the international are dealing with quite a few unethical bodily harassment in public locations consisting of railway-bus stands, foot paths etc. This paper describes approximately a one contact alarm gadget for ladies' protection the usage of IBEACON. In the mild of latest outrage in Delhi which shook the country and woke us to the protection problems for ladies, humans are locating up in specific approaches to defend. Here we introduce a tool which guarantees the safety of ladies. This allows to perceive shield and speak to on sources to assist the only out of risky situations. Anytime you feel danger, all you needed to do, is preserve at the panic switch. The gadget resembles a ordinary wearable tool which whilst activated, tracks the location of the ladies the usage of Bluetooth low strength and sends emergency messages the usage of GSM (Global System for Mobile communication), to SOS contacts and the police manage room. The proposed paintings suggests a bendy and interoperable mixture of a tool and alertness with the intention to decorate and empower the residents and function a multifunctional tool.

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I. INTRODUCTION

Security is a condition for protection from danger and loss. Security is a concept similar to general security. The nuances between the two further emphasize protection from external hazards. Anyone or behavior that interferes with the conditions of protection is responsible for breaking security. The word "safety" is commonly used to mean "safety", but technically, "safety" means that something is not only safe, but also safe. .. The new IBEACON technology is cheap. A Bluetooth Low Energy signal to activate the microlocation service and trigger an action within the app. A woman with a mobile phone can be tracked by the application simply by passing a Bluetooth signal. This technology is for security tracking for women and adolescents. IBEACON technology is used to track and "check in" women and children in urban environments using automated, low-cost Bluetooth devices. Women, adolescents and law enforcement agencies that can be easily tracked in urban environments have quick access to information, and families want to "check in" their loved ones' trips around the world. This project uses a stabilized 5V, 750mA power supply. The 7805's 3-terminal voltage regulator is used for voltage regulation. A bridge type full-wave rectifier is used to rectify the AC output on the secondary side of the 230 / 12V step-down transformer.

II. LITERATURE SURVEY

In the current situation, the important goal is to provide security to women from issues of women harassment. With the App revolution of smart phones, many security apps are developed every day but even the other side that is fraudulent or adversary knows that such apps do exist, and they are equally smart to confiscate the victims phone. In this project System we include wearable devices that will transmit data for comparing with the training dataset and if irregular values in temperature, pulse rate are identified then message will be sent to her family member, nearby police station and one friend.

As we know the present era is with equal rights, where in both men and women are taking equal responsibility in their respective works. Hence women are giving equal competition next to men in all fields, they are assigned works in both the even and odd shift. Every single day women and young girls from all walks of life are being assaulted, molested, and raped. The streets, public transport, public spaces in particular have become the territory of the hunters. Because of these reasons women can't step out of their house. The only thought haunting in every women`s mind is when they will be able to move freely on the streets even in odd hours without worrying about their security. In critical situations the women will not feel insecure or helpless if they have some kind of safety device with them.

The aim of this work is to develop a device for the safety and protection of women and girls. Indeed, even today, an evil break is made when ladies venture out with a niggling apprehension in their brains about their safety. We regularly find out about rape cases that make our blood run cold. It is a lamentable perception that there has been a significant increment in crimes against women in the previous decade. The reason can be credited to the time gap between the real time of the crime and its time of reporting to the ascendancy. In the event that by one way or another the unfortunate casualties could pass on their situation progressively, the issue can be repressed. In this project, we propose a device that sends SMS and area directions of the client to the relatives of the client or helpline number. In this system, we have used a GPS module to access location of user instantly. Three push buttons are implemented to define the types of an accident victim is facing. When the user faces any hassles in any place, it can push any of these three buttons. Then microcontroller will receive it and send an SMS to the specific phone number. The location of the user will be continuously traced until user switch off the system when rescued. In addition, to control the whole system we have used a PIC16F887A microcontroller powered by four AA batteries.

This paper detailed about a smart alarm system for women's security. Women all over the world are facing much unscrupulous physical irritation. This acquires a fast pace due to lack of a suitable investigation system. The system look like a group on the wrist merged with pressure switch as an input which when triggers shows the result loud alarm imposed for self-defensing purpose and send location and messages to the emergency contacts. The whole process will be held in Arduino Microcontroller. The digital switch incorporates with the controlling unit. Whenever the user presses the digital switch, the emergency message will be passed to the server unit via GSM SIM 800A module. By implementing the proposed system, the physical harassment on the women will be reduced.

The world is becoming so much more unsafe for women. Social evils like molestations, dowry, crime against women, worst among all is rape is on the rise in many countries. Incidents of crime against women have been increasing at an alarming pace in Indian cities, most common incidents being rape, kidnapping, sexual harassment and eve teasing.

III. PROPOSED SYSTEM

The proposed system is an application, involving the introduction of IBEACON technology. The other major technological involved in this system is RSSI (Received Signal Strength Indication) and Stun Gun. The system also employs the BLE (Bluetooth Low Energy) communication technology which determines the location of the user. The information such as location, distance of the affected person from the known person are uploaded in a webpage. And the MEMS is used to detect a sudden drop in that particular person, so the X, Y coordinates determine the value obtained after a sudden drop in a particular woman.

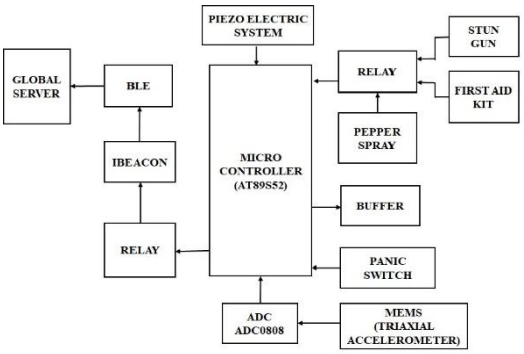

Fig 1 BLOCK DIAGRAM

HARDWARE REQUIREMENTS

- Micro Controller – AT89S52
- Relay
- Panic Switch
- BLE
- Stun Gun
- ADC
- MEMS
- Buzzer

- First aid kit
- Pepper Spray
- Piezo electric system

SOFTWARE REQUIREMENTS

- Embedded C
- Keil IDE

IV. IBEACON

iBeacon is a protocol developed by Apple and introduced at the Apple Worldwide Developers Conference in 2013.[1] Various vendors have since made iBeacon-compatible hardware transmitters – typically called beacons – a class of Bluetooth Low Energy (BLE) devices that broadcast their identifier to nearby portable electronic devices. The technology enables smartphones, tablets and other devices to perform actions when in proximity to an iBeacon

iBeacon is based on Bluetooth low energy proximity sensing by transmitting a universally unique identifier picked up by a compatible app or operating system. The identifier and several bytes sent with it can be used to determine the device's physical location, track customers, or trigger a location-based action on the device such as a check-in on social media or a push notification.

iBeacon can also be used with an application as an system, which helps smartphones determine their approximate location or context. With the help of an iBeacon, a smartphone's software can approximately find its relative location to an iBeacon in a store. Brick and mortar retail stores use the beacons for mobile commerce, offering customers special deals through mobile marketing and can enable mobile payments through point of sale systems.

Another application is distributing messages at a specific Point of Interest, for example a store, a bus stop, a room or a more specific location like a piece of furniture or a vending machine. This is similar to previously used geopush technology based on GPS, but with a much reduced impact on battery life and better precision.

iBeacon differs from some other location-based technologies as the broadcasting device (beacon) is only a 1-way transmitter to the receiving smartphone or receiving device, and necessitates a specific app installed on the device to interact with the beacons. This ensures that only the installed app (not the iBeacon transmitter) can track users as they walk around the transmitters.

iBeacon compatible transmitters come in a variety of form factors, including small coin cell devices, USB sticks, and generic Bluetooth 4.0 capable USB dongles

Functions

An iBeacon deployment consists of one or more iBeacon devices that transmit their own unique identification number to the local area. Software on a receiving device may then look up the iBeacon and perform various functions, such as notifying the user. Receiving devices can also connect to the iBeacons to retrieve values from iBeacon's GATT (generic attribute profile) service. iBeacons do not push notifications to receiving devices (other than their own identity). However, mobile software can use signals received from iBeacons to trigger their own push notifications.

Region monitoring

Region monitoring (limited to 20 regions on iOS) can function in the background (of the listening device) and has different delegates to notify the listening app (and user) of entry/exit in the region - even if the app is in the background or the phone is locked. Region monitoring also allows for a small window in which iOS gives a closed app an opportunity to react to the entry of a region.

Ranging

As opposed to monitoring, which enables users to detect movement in-and-out of range of the beacons, ranging provides a list of beacons detected in a given region, along with the estimated distance from the user's device to each beacon.Ranging works only in the foreground but will return (to the listening device) an array (unlimited) of all iBeacons found along with their properties (UUID, etc.)

An iOS device receiving an iBeacon transmission can approximate the distance from the iBeacon. The distance (between transmitting iBeacon and receiving device) is categorized into 3 distinct ranges:

- Immediate: Within a few centimeters
- Near: Within a couple of meters
- Far: Greater than 10 meters away

An iBeacon broadcast has the ability to approximate when a user has entered, exited, or lingered in region. Depending on a customer's proximity to a beacon, they are able to receive different levels of interaction at each of these three ranges.

The maximum range of an iBeacon transmission will depend on the location and placement, obstructions in the environment and where the device is being stored (e.g. in a leather handbag or with a thick

case). Standard beacons have an approximate range of 70 meters. Long range beacons can reach up to 450 meters.

Settings

The frequency of the iBeacon transmission depends on the configuration of the iBeacon and can be altered using device specific methods. Both the rate and the transmit power have an effect on the iBeacon battery life. iBeacons come with predefined settings and several of them can be changed by the developer, including the rate, the transmit power, and the Major and Minor values. The Major and Minor values are settings which can be used to connect to specific iBeacons or to work with more than one iBeacon at the same time. Typically, multiple iBeacon deployment at a venue will have the same UUID, and use the major and minor pairs to segment and distinguish subspaces within the venue. For example, the Major values of all the iBeacons in a specific store can be set to the same value and the Minor value can be used to identify a specific iBeacon within the store.

V. EXECUTION

Keil Software provides two kits that let you evaluate our tools.

The 8051/251 Demo Kit includes demonstration versions of our tools. The tools in the Demo Kit do not generate actual object code. They generate listing files where you can see the code generated by the compiler and other tools.

The 8051/251 Evaluation Kit includes evaluation versions of our tools. The tools in the Evaluation Kit let you generate applications up to 2 Kbytes in size. You may use this kit to evaluate the effectiveness of our tools and to generate small target applications.

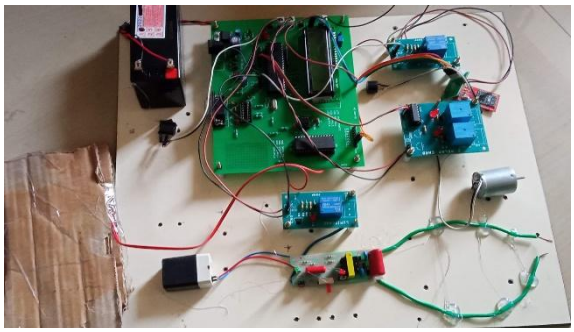

Fig 2 Project Model

Both kits include this user's guide and software. This user's guide is also included in each of our tool kits

Types of Users

These manual addresses three types of users: evaluation users, new users, and experienced users.

Evaluation Users are those users who have not yet purchased the software but have requested the evaluation package to get a better feel for what the tools do and how they perform. The evaluation package includes evaluation copies of the development tools. You may use the included sample programs to get real-world experience with our 8051 and 251 development tools. Even if you are only a evaluation user, take the time to read this manual. It explains how to install the software, provides you with an overview of the development tools, and introduces the sample programs.

New Users are those users who are purchasing our 8051 development tools for the first time. The included software provides you with the latest development tool versions as well as sample programs. If you are new to the 8051 or 251 or the tools, take the time to review the sample programs described in this manual. This manual provides a quick tutorial and helps new or inexperienced users quickly get started with the tools.

Experienced Users are those users who have previously used our 8051 development tools and are now upgrading to the latest 8051 or 251 tools. The software included with a product upgrade contains the latest development tools, the sample programs, and a full set of manuals.

VI. CONCLUSION

The main purpose is to build a safety device for women that acts as a rescue and prevents damage in times of danger, especially for women. The proposed system will develop a smart device for women's safety that automates the emergency alert system. This system detects and sends alerts for loved ones in female position coordinates without the need for their interaction at critical times. Automatically send emergency messages to relatives and nearby police stations. The prototype is suitable for carrying all types of bags, including handbags and laptops. We recommend carrying the prototype in these bags. Even the person trying to damage it may not be aware of the device in the bag. Through the customization process, this prototype can be transformed into

wearable devices such as smartwatches, bracelets and necklaces. The main advantage of the proposed system is that it implements both automatic and manual mechanisms. It is also cheap and easy to use.

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