

Zigbee Network Based Security System for Salvage Purpose with Advanced Android Application

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ABSTRACT: This paper advocates a smart gizmo for the safety of human especially women. According to neoteric reports, the Crime rate against women has increased twice the population growth rate in India. Even though the Indian government has taken lot of safety gambits for the women safety from situations like harassment, rape, and other acts of violence, still women security is an utmost dilemma of the nation which is palpable from so many instances that precipitated the country. The propound pledge device is a smart device which when activated, spoors the locality of the victim using GPS (Global Positioning System) and sends extremity messages using GSM (Global System for Mobile communication), to police control room with a device integrated advanced android application which automatically calculates the veracious position of the victim with the help of latitude and longitude and also at the instance of time the smart gadget creates a Zigbee wireless network to alert the other device holders in an area of two kilometers about the situation rendering name of device holder, their house number, along with their position which is crypt with menacing danger and letting help from them. The Android application, lollipop version, that pomp exact locality with an buzzing alarm alerting the arrival of emergency message even when the remote device is on silent mode works on the press of device button and conveys the routes that are possible to reach to the victim.

KEYWORDS: Zigbee technology, GPS (Global Positioning System), GSM (Global System for Mobile communication), Advanced Android application, lollipop version, wireless network.

I. INTRODUCTION

In the past several centuries, Indian women were never given equal cachet and room for maneuver as compared to that of our male counterparts. The patriarchal nature of our society, which even though gives reverence to women as they are our mothers and sisters, has greatly hampered both their sovereignty as well as the safety. The recent feat in which a 23 years old girl was gang-raped by 6 men inside a moving bus near a posh Delhi area and thrown off the bus naked after herself and her male friend were beaten and assaulted with an iron rod has undoubtedly shocked the nation to its nub. In adjunct to this, a massive section of women are employed in sundry sections like IT industries and networking fields and serviceable hours are not flexible. They are targets of crime directed particularly at them. Everyone talks about women empowerment but women are being trafficked, harassed at workplaces and tortured in society.

It is high time now that women should get a respectable and majestic position. Awareness in the women as well as society should be created and their equal rights should be effectively contrived. In this era of globalization and with revolution in means of communication and information technology, this paper focuses on a safety gizmo which aims at rendering safety measures by solely pressing a button with the help of technologies that are embedded in it. The device can provide ability to route the orientation of victim and dispatch the information to near-by police station and family with the aid of android application coupled with alerts send to the other device occupants in the radius up to 2km via Zigbee network. All we have to do is to carry a gizmo and upon identifying any skeptical event just nudge a button.

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This system assembly is efficient in proffering real time oddities like location tracking and automatic piercing of impeccable position through android software based application. The vital perk of this system is that the user does not entail a Smartphone unlike other applications that have been developed earlier. The implementation of hardware device along with android software based app clinches accuracy and forges it authentic and staunch providing pledge mechanism to children, women, and physically disabled people improving scope for defense system.

II. RELATED WORK

Related work in this field is perceptible from safety applications like “VithU” which is an emergency App recently launched that, at the click of the power button of your Smartphone 2 times consecutively begins sending out only alert messages every 2 minutes to two of your contacts that you feed into the app as the designated receivers or guardians but is unable to provide the veracious location at the same time and is slower to get open in smart phones. Another safety band is “spot n save” which works on Bluetooth technology, when paired with smart phone sends emergency message to contacts in phone. The biggest loophole of these application is that it requires continuous Bluetooth and if the cell phone battery is drained, one cannot use the band. These applications consume high battery due to the fact that they use GPS services and can easily hang due to bugs and less memory storage in cell phone, thus are not reliable and thus, we have designed a dedicated device for safety purpose which is activated merely by pressing of button, and does not gobble steep battery unlike cell phone and faster in operation for sending extremity messages along with locality and the routes that are possible to reach the victim as well as Zigbee network furnishes the information at same time to other device holders in an area of 2km. These assets along with Zigbee technology and advanced android application forge this device eminently authentic and infallible.

III. SCOPE OF RESEARCH

Keeping the disquietude of women in mind we have come up with this innovative system. The only thought that spooks every girl is when they will be able to move freely on the streets even in odd hours without worrying about their security so; our primary goal to protect women.

To ensure the security of women, we have proposed a system which employs a Zigbee trans-receiver for creating a network to alert the near-by people about emergency. The Zigbee is a specification for a suite of high-level communication protocols used to create personal area networks built from small, low-power digital radios. Zigbee is based on an IEEE 802.15 standard. For increasing the range of communication, instead of conventional Zigbee trans-receiver, we have used Zigbee Pro. Along with this, latest lollipop version, Android software based application is developed which is faster and accurate to get location instantaneously which is integrated with device. Scope of this research extends up physically handicapped people, blind people, children, to Cops department, fire services, and to everyone who needs safety.

IV. PROPOSED METHODOLOGY

The proposed system is a portable device to help women in distress. Our device is a gadget employing Zigbee Pro technology, GSM Sim900, GPSSim28ml, screaming buzzer and ATmega16 microcontrollers of TQFP and DIP package. Upon identifying unsafe environments, as soon as the button is pressed, the device gets activated. GPS receiver sends activating signal to the satellites and GPS receiver have tiny antenna that directly receive the data sent by satellites and compute precise location. After retrieving latitude and longitude, GPS receiver renders it to the master MIC AT mega 16(TQFP) which is an ATmega16 chip operating at 8MHz frequency. Master MIC copies the location and sends to GSM as well as Zigbee Pro 802.15.4 standard module. GSM dispatches the location message to a remote mobile which in turn activates the Android lollipop 5.0 version based application that exhibits exact locality with an alarm alerting the arrival of emergency message even when the remote device is on silent mode along with the routes to reach the victim.

On the other hand, Master MIC also sends the message to Slave MIC, ATmega16 (DIP) which activates the Zigbee for communicating the owner’s information and location with other Zigbee devices. As soon as the message is sent, buzzer

alerts the device holder that information is sent successfully. While on receiving base station it alerts the receiver that an emergency message has arrived by buzzing continuously. With the help of Graphical LCD (128x64), an emergency message along with sender's name, his/her mobile number, residential contact number and current location is manifested. The system is capable of searching the exact location without manual searching with the help of advanced android application, it would be traced automatically. The buzzer is used to notify about the emergency situation. This will increase the probability of safe rescue of the victim as along with the family and police, the nearby people will also be alerted about the emergency situation.

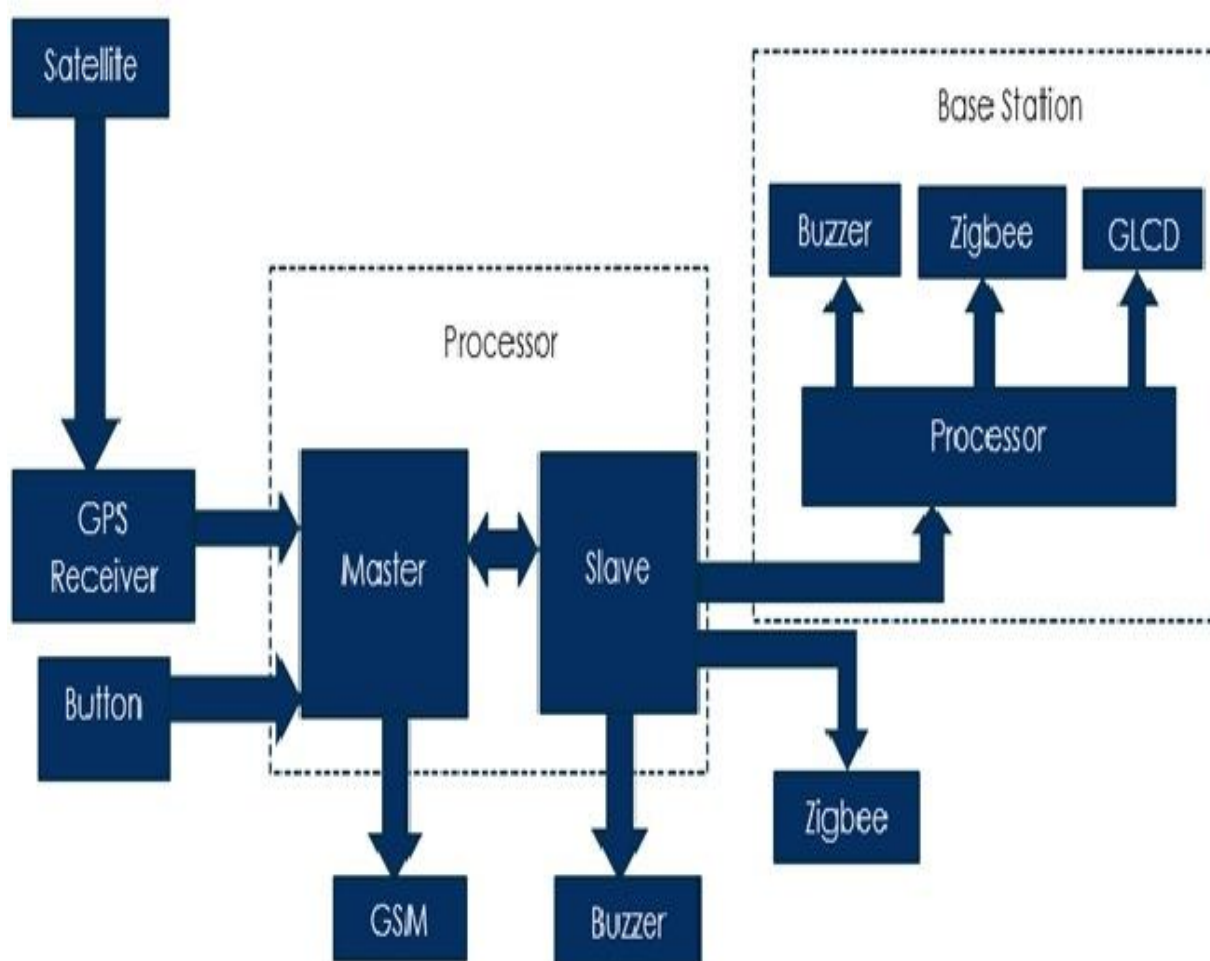


Fig. 1:- Block Diagram of proposed system

Software implementation of the proposed system is represented in fig. 2. As shown in flow chart, at first, when the button is pressed, the GPS navigation will be activated and it will start searching for latitude and longitude of the location which would be copied and send simultaneously to the specified remote location and to the near-by Zigbee devices. As soon as the contact would receive the latitude and longitude positions, the android application in their cell phone will get activated alerting the owners about the unfortunate situation and within a few seconds it will automatically search the veracious location of victim along with the routes to reach them.

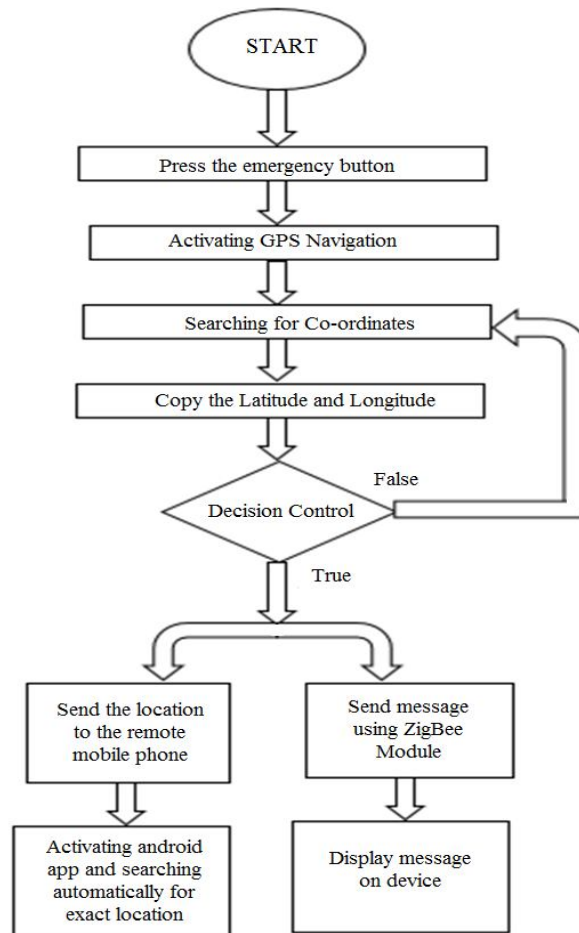


Fig. 2 Flowchart of proposed system

V. EXPERIMENTAL RESULTS

Following figures v.i.z fig 3 shows the transmitter section of the device from which device is activated in case of extremity, fig.4, shows the emergency message along with name of victim, their phone number and home phone number along with GPS position in form of latitude and longitude . Fig 5 shows the pumping of android application which gives position of victim with routes to search them and Fig 6 shows the inbox message generated at same time.

Hardware Implementation

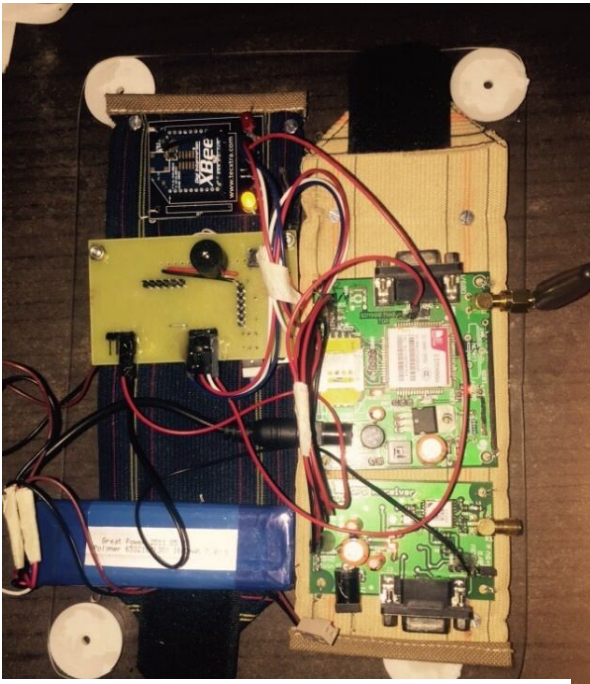


Fig.3 Transmitter of smart gadget



Android Software Application

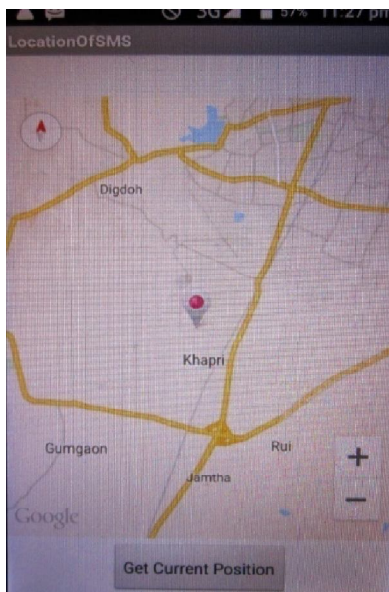


Fig.5 Application view in cell phone

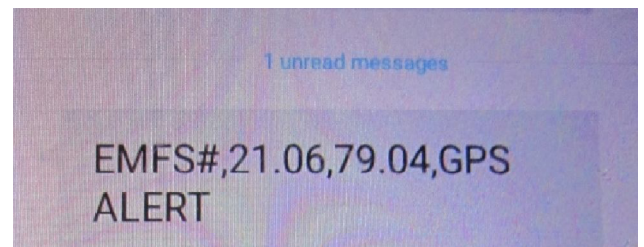


Fig.6 Mobile inbox in cell phone

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VI. CONCLUSION

We have implemented a device which is helpful in dealing with critical issues faced by women. This system is a staunch system with Zigbee technology and Android technology which can overcome the fear that scares every woman in the country about her safety and security.

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