DISTRESS SIGNALING WITH GPS INTEGRATION EMERGENCY SYSTEM

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Abstract—A distress signal is an internationally recognized means for obtaining help. Distress signals take the form of or are commonly made by using radio signals, displaying a visually detected item or illumination, or making an audible sound, from a distance.

A distress signal indicates that a person or group of people, ship, aircraft, or o other vehicle is threatened by grave and imminent danger and requests immediate assistance.

In order for distress signaling to be the most effective, two parameters must be communicated:

- Alert or notification of a distress in progress
- Position or location (or localization or pinpointing) of the party in distress.

This invention relates to signal devices and relates more particularly to a distress signal device particularly well suited for disclosing the location of a person who is lost. A general object of this invention is to provide a practical, dependable distress signal or rescue signal that automatically goes into effective operation when the button is pressed.

Keywords: GPS(Global Positioning System), GSM(Global System for Mobile Communication), Bluetooth module, Image capturing device, Embedded system(any one programming language), Microcontroller.

I.   INTRODUCTION

When a person is assaulted by someone or something, it can be a problem for him/her to call for help. There is a possibility, where there might be no one else in the vicinity when that person is attacked, making it an improbable situation for that person to shout out for help. We also can say that when you're in distress, it isn't practical to reach for your phone, unlock it, recall your exact location and then call for help in all situations.

OURSYSTEM:

What we are trying to do with our system is to provide a practical solution for the above discussed problem, wherein the person being assaulted can signal for help at the press of a button, which can be reached for easily. On pressing the button, an emergency message will be sent out to the concerned authorities, one or more dear ones and also any people who are in the vicinity of the assault. It works as follows

• The technology used is a combination of Global System for Communications (GSM) and a Global Positioning System (GPS) chip. The GSM chip is used for sending alarms and location

coordinates while Short Message Service (SMS) and other data is sent via General Packet Radio Service (GPRS). These are integrated in a wrist band.

•   We will integrate an image capturing device into our module via Bluetooth.

•   When in distress, the user can reach out for the band and activate the device which in turn will trigger the image capturing device to capture the image and send it back to the wristband via Bluetooth.

•   On receiving the captured image, the gsm module of our wristband will send out the details of the person in distress along with the GPS coordinates as a Short Message Service(SMS) and the image via the GPRS to the police control center and preset contacts.

II.   OBJECTIVE OF OUR SYSTEM

The main objective of the project is to help people in distress by allowing them to send a distress signal along with their current location and also an image if necessary.

So what we are trying to do with our system is to provide a practical solution wherein the user can signal for help at the press of a button, which can be reached for easily, when in distress.

Once activated, a signal containing the exact GPS location is sent via mobile phone network to our headquarters as well as to people in the vicinity who can immediately come to the rescue. The ability to act quickly in situations like these can literally be the difference between life and death. Within minutes of the attack, the signal is also sent out to global social media platforms, allowing people everywhere to immediately get involved and put pressure on the regime in the event of an attack.

III.   EXISTING SYSTEM

We read an interesting article in the Wireless Design & Development magazine. The article was about the Natalia Project, which is named after a human rights worker Natalia Estemirova who was assassinated in 2009 as she was investigating the alleged kidnappings, torture and extrajudicial killings by Russian government troops or paramilitaries in Chechnya.

The Natalia Project is wireless alerting system (much like active RFID tags). The bracelets are able to send distress signals when activated by the wearer, or when the bracelet shows signs of tampering. The tampering sensor activates automatically if the bracelet is removed by force.

The technology used is a combination of Global System for Communications (GSM) and a Global Positioning System (GPS) chip. The GSM chip is used for sending alarms and location coordinates while Short Message Service (SMS) and other data is sent via General Packet Radio Service (GPRS). If GPS location signals are not available, locations are derived by GSM triangulation.

When a device is triggered, a signal is sent via GPRS to the Civil Rights Defenders servers in Stockholm. There, the authenticity of the alarm is verified and decisions are made as to what information should be shared or posted on social media platforms.

IV.   DISADVANTAGES

In terms of modern technology, smartphones can already track one's location, and obviously make calls. There are various smartphone apps which allow us to send distress signals. When a person is assaulted, it can be a problem for him/her to call for help. It is possible that there might be no one in the vicinity when we are attacked making it an improbable situation for us to shout out for help. We

also learned that when you're in distress, it isn't practical to reach for your phone, unlock it, recall your exact location and call for help in all situations

V.   ADVANTAGES OF OUR SYSTEM

▪   Compact, easy to wear device.
▪   Easy to reach for, when assaulted.
▪   Camera module helps in capturing a picture of the assaulting person or the surroundings of the person being assaulted.
▪   Also helpful when we are lost in the middle of nowhere as the device sends the GPS co-ordinates.
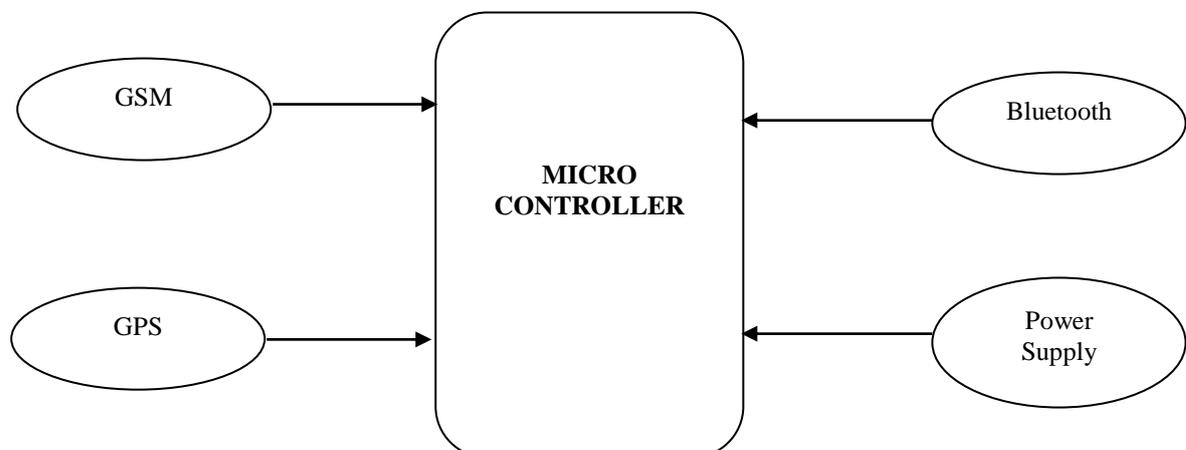▪   Low power consuming modules.
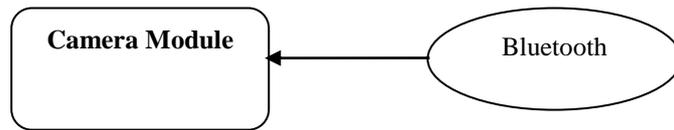
VI.   HARDWARE REQUIREMENTS

•   Wristband Module
✓   Micro Controller
✓   GPS Module
✓   Bluetooth Module
✓   Power Source

•   Camera Module
✓   Image capturing device
✓   Bluetooth Module
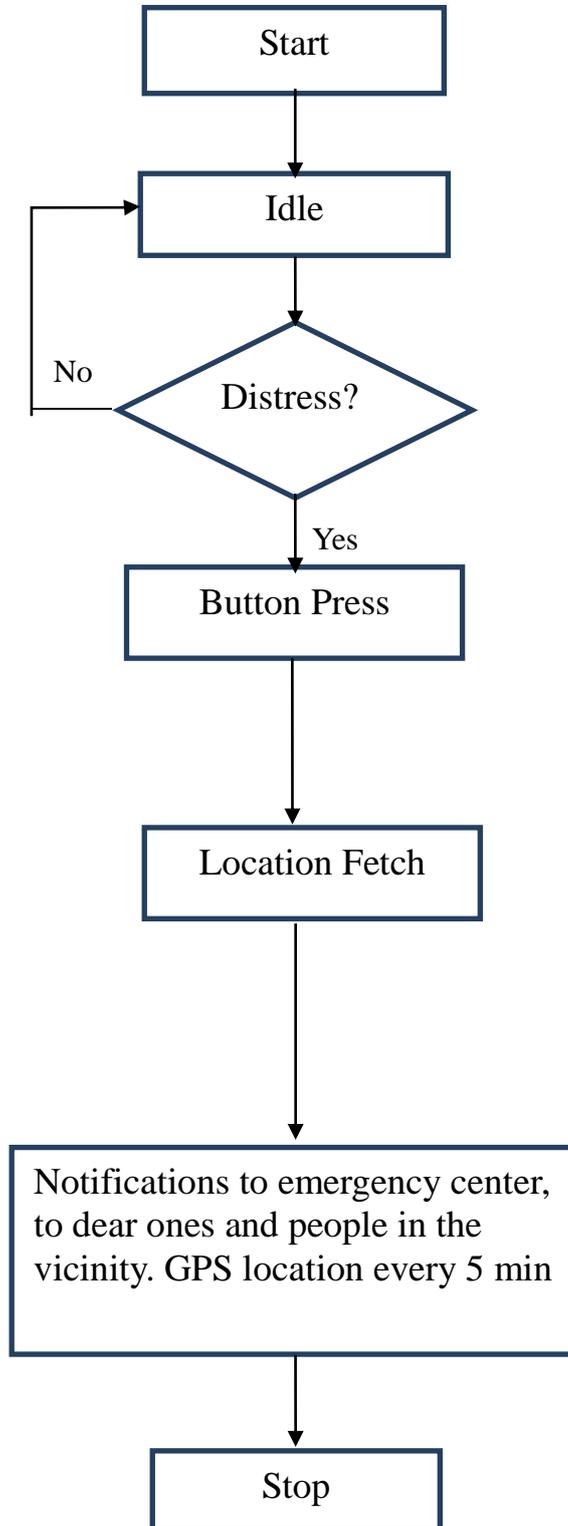✓   Power source

VII.   SOFTWARE REQUIREMENTS

▪   C Program
▪   Embedded Program
▪   Google Maps
▪   Javascript

VIII. DESIGN DIAGRAM

IX. FLOW DIAGRAM

X. SEQUENCE OF ACTIONS

- Initially the system will be in an idle state.
- When the person senses danger or any other situation where he require any sort of help presses the button of the device
- Present location of that person is fetched using GPS module, which locates the location for every five minutes.
- Notifications to emergency center, to dear ones and people in the vicinity.

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