ISSN 2395-1621

Design of Tracking Device for Women and Children

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ABSTRACT

Now a days the world is becoming so much more unsafe for women. With increasing atrocities on women and children, arises the need of an advanced system to serve the purpose of alerting someone for help. Most of the cases remain mystery because of lack of evidence or them being tweaked. The situation is noxious and we propose a system that would aid the victims not only to send a panic and alert message but also collect evidence in the form of images. The system is designed also to be used as an alert system during the medical emergency. An alert message along with the user location is sent to a predefined Mobile Station until the system is reset. Since a change in Longitude and Latitude is sent continuously, the person can be tracked. This proposal document describes a quick responding, cost effective system for an individual and especially for women. This would help reduce crime against women.

ARTICLE INFO

Article History

Received: 11th February 2017

Received in revised form : 11th February 2017

Accepted: 15th February 2017

Published online : 16th February 2017

Keywords: Tracking device, Women and children safety,

I. INTRODUCTION

Women security and safety has risen to become agenda of many political parties. In today's world, women safety has become a major issue as they can't step out of their house at any given time due to physical/mental abuse and a fear of violence. Even in the 21st century where the technology is rapidly growing and new gadgets were developed but still women and girls are facing problems. The crimes against women, as reported by the National Crime Records Bureau of India, have increased by 6.9% in 2015. The statistics at the NCRBI shows that on an average every three minutes a crime is committed against women. In recent times the crime seems to be rising in an alarming rate. Around 344,270 crimes against women were reported in India in 2015 alone. It is a matter of fact that this is just a figure, as number of cases goes unregistered due to fear, social stigma attached and suppressed. These figures refers to the gravity of problem in India that a women face.

The device described here is a self-defence system specially designed for women in distress to help them to protect themselves. This device can be fitted in a purse, belt or on the wrist as a watch and the panic button can be attached on the watch or on belt. The lady in danger can activate the system by pressing emergency button on . It is a simple and easy to carry device with wide range of features and functionality. The basic approach is to intimate instant location and a distress message to the cops and registered number like parents, friends, and women cell etc. so that unfortunate incidents would be averted and to provide real time evidence for swift action against the perpetrators of crime against women.

Around 2 lacs people are on the risk of heart problems, so it is necessary to continuously monitor the health of the persons specially of old aged. So we have interfaced heart bit sensor to continuously monitoring of health. Also there is Body Temperature Sensor which will sense the rise in temperature of the body.

The block diagram of the conceptual system is shown in below figure. The microcontroller acts as an embedded computing system and controls the activities of all the subsystems. It is interfaced with Emergency Switch, Analog to Digital Converter (ADC), 3-Axis Accelerometer, Heart bit Sensor, Body Temperature Sensor, GPS Receiver, GSM MODEM, Flex sensor, High Voltage Shock Circuit. The microcontroller periodically monitors the status of all sensors.

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II. EXISTING SYSTEM

The idea of the project is drawn from the medical alert systems with the health & telemedicine monitoring using GSM and GPS technology, where the GSM/GPS system is used to alert in case of medical emergency. But this system does not have an automatic feature as proposed in this paper. Real-time alert system for home surveillance is another monitoring system. Here a complex system attached to computer at home is used. It has group of sensors attached and a central system which continuously monitors the region it sends an e-mail and sms to the stipulated id and mobile station respectively. It is wired and not portable.

There are numerous Android apps which deal with the same cause. Say detect a fall and send message or alert on turning ON the app. Another drawback here is that most of these have to be initiated manually, which may alert the attacker to prevent the victim from doing so. A prominent method of detecting a person under threat is using GPS system. We have incorporated the same in our prototype too. GPS system gives accuracy as high as 40 meters.

Flex sensors are the least expensive and the most effective sensors available in the market. There are reasonably large numbers of products available in market using the same. The advantage of Flex sensor lies in the fact that they are compact, cheaper, accurate and can be used up to a million bends. This is a promising factor and we incorporate the same in our system.

III.PROPOSED SYSTEM

The paper proposes an automatic cum manual device which would help the victim to alert others during emergency situations IV.B FLOW CHART and also collect evidences in the form of Image. The proposed prototype can be turned ON by an action of human hand (twisting of Wrist). This is because it is not necessary a victim will always have freedom to turn on the system manually.

The system proposed has three options for the victim to turn it ON. If the victim has a degree of freedom to turn ON the system, then a simple switch can be used to turn the system ON. When a person is attacked or in a dangerous situation, and cannot press the switch a gesture of hand (movement of wrist) will be sensed by the Flex sensor. This would turn on the wireless Camera which would be attached somewhere in the body which starts live streaming the image to a remote location continuously Control Room.

Meanwhile, the GSM would start sending the panic message to the phone numbers already stored. The Image captured would be sent to the control room using live streaming until the system is reset. These messages would be sent on an interval of 30 seconds until the system is reset. The proposed system is planned to be non-Android keeping in mind that the system has to be of use even for children. Most of the products in market today are Android based. Size of the product is another pivotal factor that we cannot undermine. This is because; the armband must be less prominent and visible to others. Another challenge is the cost factor that needs to be considered as it is crucial for the success of the product along with the time to market.

A. BLOCK DIAGRAM

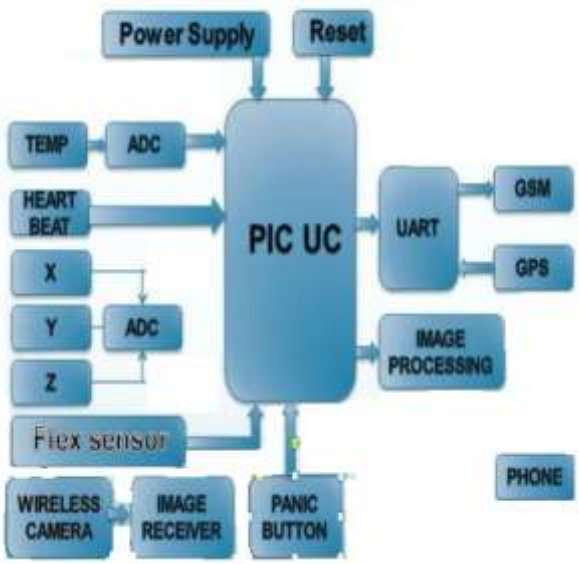

Fig. 1 Block Diagram of Transmitting Unit

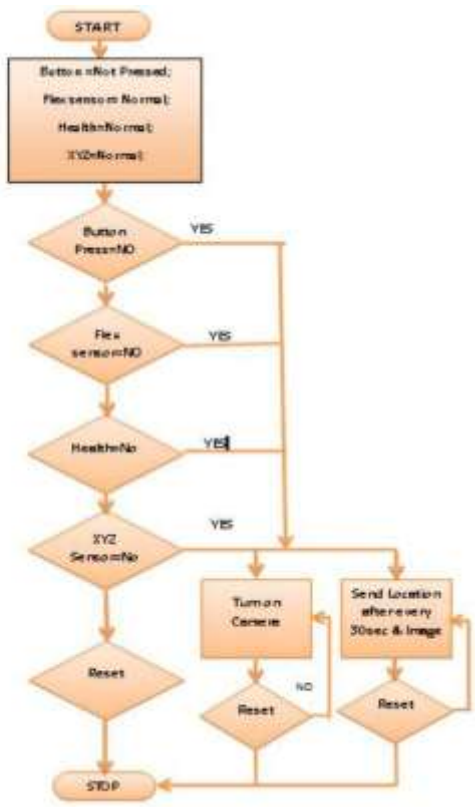

Fig. 2 Flow Chart

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The flow chart explains the working of the prototype design under consideration. Initially the system is such that the button is not pressed. Flex sensor is in the normal position and the camera is turned OFF.

Highest priority is given to the button. Once the button is pressed, the system turns ON the wireless Camera. The Image is live Streamed to the Control room. The GSM/GPS system starts sending an alert message along with the location (latitude and longitude) to a predetermined Mobile Station.

If the flex sensor is twisted, then it initiates an action where the wirelessly captured image is transmitted to the control room along with the location details to the predetermined Mobile Station.

If there is an increase in body temperature or heart bit then the sensor will sense it and it will send the panic message to the pre stored number. Also there is an XYZ sensor interfaced so if the user is travelling outside the fixed distance in any direction then sensor will sense it and send the location of user using GSM to the given number. If all parameters are normal and if the Emergency Switch is not pressed, it goes back in the loop and continues regular monitoring process. But, if any of these parameter values are abnormal or if the Emergency Switch is found to be pressed, It will automatically send the message to the pre-defined numbers with current position, and also camera will start and capture the images, also it will send the collected images.

IV. SYSTEM ARCHITECTURE

The block diagram consists of following sections:-

Microcontroller (PIC 16F) XYZ Sensor

BODY TEMPERATURE Sensor Heart bit sensor

Analog to digital converter (ADC) GSM

GPS

Wireless camera PANIC Button

FLEX Sensor

V. APPLICATIONS

- Can be used for the safety of women.
- Can be used for the safety of children.
- Can be used for the safety of elderly aged people. Can be used for the safety of physically challenged people.
- Can be used as a legal evidence of crime with exact location information for prosecution.
- It can be used to continuously monitor the health of the patient.
- It can be used in defence to track the soldiers in case of emergency.

VI. ADVANTAGES

- Safety Device which can be carried by everyone. Wireless connectivity.
- Easy and fast to install.
- Low cost with high performance. Environmental friendly system.

VII. RESULTS/CONCLUSION

The project would aid in enhancing the safety and security of all despondent and badgered women and children. This we believe would help not only one to feel secured but also help the law enforcing authorities to bring the masquerading culprits to light. This project will be also helpful to continuously monitor health of the patient this project is a step closer for us to improve our social security. attacker. if the system is not reset within the stipulated time, obtain location information from the GPS and prepare a text.

ACKNOWLEDGMENT

I would like to thank Dr.A.D.DESAI, Principal, SRCOE, Pune, Dr. SUJATA RAO, Professor and Head of the, Department of E&TC, SRCOE, PUNE, Prof. Sachin Murarka, Asst. Professor, SRCOE, PUNE for their guidance, encouragement, in doing this work.

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