



Automated Women Distress Detection and Indicating System

G. Muneeswari^{1*}, R. Banupriya², V. Meena³, K.R. Vaishnav⁴

¹Professor, ^{2,3,4}U.G.Students

Department of Computer Science and Engineering

Vel Tech Multitech Dr.Rangarajan Dr.Sakunthala Engineering College

*Corresponding Author Email : muneeswarig@veltechmultitech.org

Abstract

As in modern world with increasing harassments towards younger women, there is a requirement for an automatic smart system to get rid of the dangerous situation. There are lot of crimes against women cases closed due to non-availability of evidences or the perpetrator escapes from crime. In order to avoid and prevent such pathetic situations, a new idea is proposed in this paper. In this proposed system along with the alert and panic information, victims can also initiate a voice call. We propose a system that could be easily started by the action of human. On initiation, voice call alert and a distress message with a longitude and latitude location will be sent to the pre-stored cell number and also updated on the server. The person is tracked along with which we implement sudden shocking mechanism to protect against any possible harassment.

Keywords: Distress System, Alert System, GSM, Location, IOT.

1. Introduction

The core idea in this paper is to provide immediate rescue measures like automatic voice call and message alert to the prelisted authorized person's mobile number seeking help when some distress occurs. As the crimes against women and children is increasing rapidly, we propose a system that works on providing security solutions using smart devices making use of PIC microcontroller for women, that alerts, communicates with secure channels and generates a mild amount of shock so that the victim can defend herself. There are many android applications intended for women safety, but they are not efficient. So to solve this issue, we come up with a prototype which is easy to use and efficient. We propose an automated system which collects the sensor values and in case of any distress the system will automatically send alert message/call to the victim's relatives and the information is also updated to the IOT server to take necessary actions. This saves time and the victim gets help immediately. In this paper, section II discusses the literature review and section III describes the system design, Section IV describes working methodology of the proposed solution and in section V the results obtained have been discussed. The last section summarizes the results and concludes the paper.

2. Literature Survey

B. Emrah Benli [1] Our algorithm uses signal-strength-based intervehicle-distance measurements, vehicle kinematics, and road maps to estimate the relative positions of vehicles in a cluster. We have analyzed our algorithm by examining its performance-bound, computational-complexity, and communication-overhead requirements. E.Dingding Xiong [2] proposed an algorithm which considers the location and tracking problem for the indoor and outdoor targets with the single input multiple output (SIMO) radar. An effective algorithm based on phase comparison is

presented to derive the target azimuth by exploiting the phase differences between the return signals among the multiple channels. In addition, the target range is derived via employing the fast Fourier transform (FFT) technique. Combined with the azimuth achieved, this method can be applied to accurately locate and track the moving targets whatever indoors or outdoors. Finally, the experiment results validate this method, and demonstrate the effectiveness.

G.A.Matei Chiperi [3] presents a method to detect and track a person at a home using many sensors. This smart system is proposed for the Aml-Lab and the entire design framework is compatible with the software architecture developed for this laboratory. K.Theis Bo Rasmussen [4] has designed a Target Tracking from Omni-Directional (O-D) thermal images for intelligent perception in unmanned systems. An automatic indoor human tracking environment proposed by V.L.Ibrahim Al-Naimi [5] given a noticeable research concern because of the requirement of multiple services for smart home. The core idea of this paper is to incorporate an advanced tracking approach with the help of smart floor that detects people accurately.

3. System Design

In the existing system, At present, we send alert intimation in the form of a text message. In case, if the message is not delivered successfully or if it takes too long to deliver then there is no use. There are various safety apps present on the play store designed for the protection and security of women. Anti-molestation jacket is also in existence, but it does not incorporate the idea of sending alert message to the relatives of the victim. The disadvantages are the Apps for ensuring the safety of women are designed to be used only in android mobiles. There are lot of poor user interface. Victims need to manually trigger the application and only a text message (SMS) will be sent to the care takers or helpline numbers. Suppose if the SMS is not sent/ delivered on time, then the system

would fail. In our proposed system we make use of MEMS sensor which continuously monitors the body movements which it then transfers to the microcontroller.

Along with that we also measure the heart beat rate of the person with the help of heart beat sensor (Fig.1). When an abnormal heart rate is observed then the MCU will automatically send a alert message/call with the help of GSM MODULE. Along with that we can update the status in server through IOT module. If the sensor values reach the threshold value then the shocking mechanism will automatically generate some minimum amount of voltage, during that situation if any intruder tries to attack the person then a mild shock will be experienced by the intruder and invokes the buzzer system. The user can manually control the safety mechanism through switches also. The advantages are emergency calling process is implemented. It incorporates an automatic shocking technique for an intruder, on the spot defense from the assaulter. It is compact, power efficient, portable and can be initialized both automatically and manually.

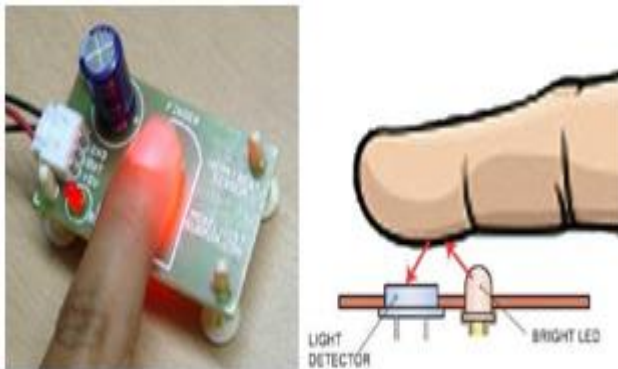


Fig.1: Heart Beat Sensor

4. Distress Detection and Alerting System

The system model (Fig.2) consists of two sub-systems namely Sensing subsystem and Communication subsystem. Here we are using MEMS sensor which are already fixed in the human body, whenever any accident or abnormal pressure occurs in the body then the MEMS sensor picks up the signal and transfers it to the microcontroller. Along with that we measure the heartbeat rate of the women with the help of heart beat sensor.

When some sudden incident occurs with the women, then the MCU will automatically send message signal along with the location through GSM MODULE. If the sensor value reaches beyond the threshold value then text message SMS / CALL alert will be sent automatically to the emergency contact numbers. And also we can automatically update the location and the emergency alert message to the control room through IOT module. The core idea of the proposed system is to provide immediate help when some distress occurs. If the sensor values reach the threshold value then the shocking mechanism will automatically generate some minimum amount of voltage, during that situation if any intruder tries to attack the person, then a mild shock will be experienced by the intruder.

We make use of MEMS sensor which continuously monitors the body movements which it then transfers to the microcontroller. Along with that we also measure the heart beat rate of the person with the help of heart beat sensor. When an abnormal heart rate is observed then the MCU will automatically send an alert message/call with the help of GSM MODULE to the emergency contact numbers. If the sensor values reach the threshold value then the shocking mechanism will automatically generate some minimum amount of voltage, during that situation if any intruder tries to attack the person then a mild shock will be experienced by the intruder and invokes the buzzer system.

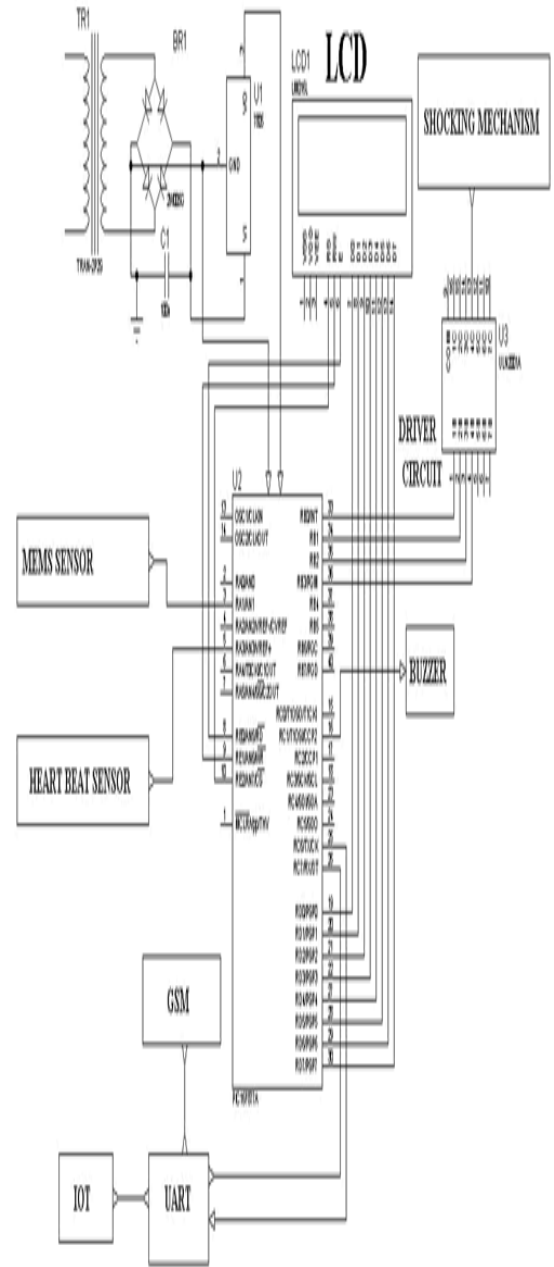


Fig.2: System Architecture (Hardware Design)

When the sensor values reaches above the threshold value then the alerting system will automatically provoked by Relay / switch. Alerting system includes buzzer and will also has GSM module that will automatically sends the alert message including the victim's location to the predefined mobile numbers. And the information is also updated in the server using IoT module.

5. Evaluation Analysis

The entire system design can be implemented with the help of system C and first of all the transmitter and receiver pin number of GPS module has to be defined. Next immediate step is to construct a serial buffer with baud rate of 9600 and bit rate of 4800. Then finally a loop has to be activated which reads the contact number from SIM card memory, take data from GPS module, Convert the longitude and latitude from GPS into a Google URL and towards the end this URL with the emergency message is attached. This message is sent to all the numbers from SIM memory periodically until device is reset.

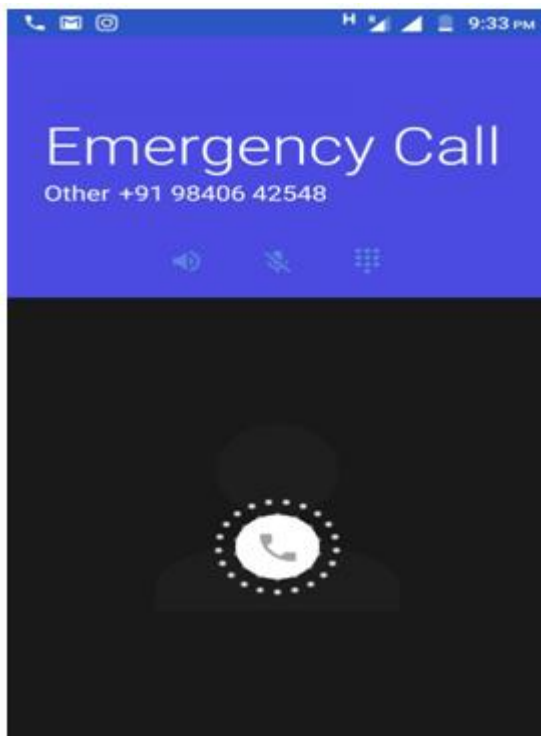


Fig.3: Emergency Call from victim



Fig.4: Emergency SMS from victim

NAME	MESSAGE	LOCATION	Date
VASHVI	EMERGENCY	LAT_12.750N, LONG_80.197E	2018-03-16 02:07:11
VASHVI	EMERGENCY	LAT_12.750N, LONG_80.197E	2018-03-16 02:06:48
VASHVI	EMERGENCY	LAT_12.750N, LONG_80.197E	2018-03-16 02:06:34

Fig.5: Longitude and Latitude from victim

Fig.3, Fig.4, Fig.5 displays how the emergency message is updated on the IOT server to intimate the police to take necessary actions.

6. Conclusion

Women safety in the society is an important social factor and concerned about this state of affairs, a new system is proposed, which can be implemented into women's accessories such as hand bag, belt, purse, watch. The shocking mechanism incorporated into the system would provide additional safety as it is invoked automatically monitoring the outputs of the HB and MEMS sensor. This eliminates the disadvantages of manually button pressing safety devices, because when an incident occurs with women, she may or may not get the chance to press the emergency button. A total success rate of 92% is realized with the proposed method and hence can be considered in comparison with existing methods. The concept can be used to provide security for physically challenged girls by adopting voice reorganization kit. We are trying our best to reduce the device size to a small scale, so that it can be worn as a fashion accessory. We are also analyzing the advanced technologies as to how to incorporate this concept into clothing using insulating materials. Pepper spray mechanism can also be included as an additional feature.

References

- [1] Boukerche.A, Oliveira, A.Nakamura, and A.Loureiro (2008), "Vehicular ad hoc networks: A new challenge for localization-based systems," Computer Communications, vol. 31, no. 12, pp. 2838–2849.
- [2] Drane.C and C.Rizos (1997), "Positioning systems in intelligent transportation systems," Artech House, vol.21,no.11,pp. 350.
- [3] Drawil.N and O.Basir (2008), "Vehicular collaborative technique for location estimate correction," in Vehicular Technology Conference. Vtc 2008-Fall, vol.17,no.2,pp. 1–5.
- [4] Jagadeesh.G, T. Srikanthan, and X. Zhang, (2004) "A map matching method for gps based real-time vehicle location," Journal of Navigation, vol. 57, no. 3, pp. 429–440.
- [5] Jo.K, K. Chu, K. Lee, and M. Sunwoo (2010), "Integration of multiple vehicle models with an imm filter for vehicle localization," in IEEE Intelligent Vehicles Symposium, vol.41,no.9, pp. 746–751.
- [6] Laftchiev, C. M. Lagoa, and S. N. Brennan (2015), "Vehicle localization using in-vehicle pitch data and dynamical models," IEEE Transactions on Intelligent Transportation Systems, vol. 16, no. 1, pp. 206–220, 2015.
- [7] Lee E.-K., S. Yang, S. Y. Oh, and M. Gerla (2009), "RF-gps: Rfid assisted localization in vanets," in IEEE International Conference on Mobile Adhoc and Sensor Systems, vol.20 ,no.2, pp. 621–626.
- [8] Lee, J. H. Song, J. H. Im, S. H. Im, M. B. Heo, and G. I. Jee, "Gps/dr error estimation for autonomous vehicle localization (2015)," Sensors, vol. 15, no. 8, pp. 20 779–20 798, 2015.
- [9] Lu, S. A. R. F, E. Seigneze, and R. Reynaud (2014), "Probabilistic error model for a lane marking based vehicle localization coupled to open source maps," in IEEE International Conference on Intelligent Transportation Systems, vol.23,no.6, pp. 360–365.
- [10] Parker.R and S. Valae (2007) , "Vehicular node localization using received signal-strength indicator," IEEE Transactions on Vehicular Technology, vol. 56, no. 6, pp. 3371–3380.
- [11] T. Padmapriya and V. Saminadan, "Inter-cell Load Balancing Technique for Multi- class Traffic in MIMO - LTE - A Networks", International Conference on Advanced Computer Science and Information Technology , Singapore, vol.3, no.8, July 2015.
- [12] S.V.Manikanthan and D.Sugandhi " Interference Alignment Techniques For Mimo Multicell Based On Relay Interference Broadcast Channel " International Journal of Emerging Technology in Computer Science & Electronics (IJETCSE) ISSN: 0976-1353 Volume- 7 ,Issue 1 –MARCH 2014.
- [13] S.V. Manikanthan T. Padmapriya "An enhanced distributed evolved node-b architecture in 5G tele-communications network" International Journal of Engineering & Technology (UAE), Vol 7 Issues No (2.8) (2018) 248-254.March 2018