

Anti-molestation Device with Heart Rate Sensor

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Abstract

Over the last few years, the status of women in India has changed dramatically. Women, however, continue to face social problems and are frequently victims of abuse and violent crimes. Every day, hundreds of thousands of women are subjected to acts of manhandling. Our project's sole strategy is to provide police, friends, parents, and women's cell with an instant location and a message to a pre-defined number in order to avert tragic situations. Neither women nor their families need to worry about their safety and the time or places when they go out. All they need is a small device that can be carried around and alerts the woman when she feels threatened. We show the design and implementation of a gadget that uses a few sensors to detect fear or anxiety and warn the person who is monitoring the web application in this project. The web program receives this information about the attack so that it can send messages to a few emergency numbers. And assistance is on the way!

Keywords: Internet of things, unified modeling language, touch sensor, security system, IoT services

INTRODUCTION

This study explains how to “use science to provide safety to women on the street”. The proposed system is made up of two components: a touch sensing system and a smart device. When the “anti-molestation device” detects a significant increase in the victim's nerve speed and pulse rate, it activates. The victim must ensure that the dial of the device touches an exposed part of the attacker's body for it to be effective as it is based on the touch sensor. The first module of it has a touch sensor, whose properties change when aggressively touched (i.e., twisted or hit hard), allowing one to determine whether or not the individual is in danger. When the user is in an unsafe scenario, after the connection is made, the touch detecting system strobes the smart device, which sends the alert to the online portal. This section gives an idea about bringing together several elements. The following section “The Working Framework” outlines our strategy to using sensors to detect touch and wirelessly transmitting the data. The data flow diagram of the system is presented in the Methodology Section [1]. The main focus of this study is on a security system designed to assist women in

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addressing social obstacles when they feel helpless. Using technological devices such as GPS, pulse rate sensors, and IoT, we can identify a person's position and health status, allowing us to take appropriate action. We can utilize a sensor to detect the current situation of women in serious abusive scenarios in real time. In such instances, a person's heartbeat is usually faster, which aids decision-making when she is being victimized. When compared to existing women's security solutions, the rationale for developing a smart gadget for women is that it is fully comfortable and simple to use.

The smart gadget that is integrated with the webpage has the extra benefit of lowering the device's cost and reducing its size [2].

OBJECTIVE OF STUDY

The main goal of this project is to create and implement a women's safety gadget that protects the user against attacks. This device ensures that the user's safety is maintained. The requirement for a gadget that automatically detects and rescues the sufferer is the thrust of our proposal in this study. We suggest using IOT to create a microcontroller gadget that connects with the website in real time. As a result, a signal is generated and sent to the website. The online application has access to GPS and messaging services, and it is pre-programmed to send aid requests and location coordinates to relatives and parents via the internet and text messages if it receives an emergency signal.

LITERATURE REVIEW

IoT-based devices are becoming increasingly popular because of their flexible interactivity. The Internet of Things (IoT) energizes the communication between devices. It also simplifies robotics and reduces humanoid sweating, which can save a lot of time. Nonetheless, there are some security and privacy concerns in the IoT system [3]. So, in this study, we discussed an IoT-based device called "Anti-Molestation" to ensure the safety of women and children in everyday life. The device can send SMS messages to the victim's friends and family containing her current location. In addition, the device can make an on-demand call to Emergency Number. Hyndavi *et al.* used a pulse rate sensor and a temperature sensor to detect a possible issue, and then used an SMS Gateway to warn family or friends [3]. The authors created a gadget that uses pulse, temperature, and pressure sensors to identify any violations. If the pressure exerted to the lady exceeds the allowed level, the pressure sensor will detect it. The pulse rate sensor detects any abnormalities in a woman's pulse rate. The combined readings from all three sensors are utilized to detect any potentially dangerous conditions. The device has a button that the woman can press if she does not feel comfortable. This activates the buzzer, which informs anyone in the vicinity of the woman that she is in danger [5, 6]. The woman's location is identified and communicated to her relatives using the GSM and GPS module. Nandita Viswanath, Naga Vaishnavi Pakyala, and G. Muneeswari [4] proposed a smart foot gadget for women's protection, that was an attempt made to design a smart device that can help women feel safer when they are in danger. This smart device will be attached to the user's footwear and can be activated surreptitiously. An alarm is delivered via Bluetooth Low Energy communication to an application on the victim's phone, set to generate a message for help with the position of the device attached, after tapping one foot behind the other four times. The Naive Bayes classifier was used to analyze the results, and this low-cost gadget had an overall accuracy of 97.5% [7, 8]. Manu Chopra, a young inventor, has created an anti-molestation device for women [9]. This device works by delivering electric shocks to attackers based on the speed of their nerve impulses. The average speed of nerve impulses transmitted from the brain to the rest of the body is 60 m/sec. In the event of a molestation attempt, the speed of nerve impulses increases to 119 m/sec. The device detects the increased nerve impulse and stings the attacker with a 0.01 amp electric shock. On contact, the attacker is rendered paralyzed for a few moments, giving the victim time to flee [9].

METHODOLOGY

Data Flow Diagram (DFD)

It depicts the information flow for any process or system. It shows data inputs, outputs, storage points, and the routes between each destination using defined symbols such as rectangles, circles, and arrows, as well as short text labels. Data flowcharts can range from simple, even hand-drawn, process overviews to detailed, multi-level DFDs that delve progressively deeper into how data is handled. They can be used to analyze a current system or to create a new one [10]. We have shown below the data flow diagram for women safety device in Figure 1.

The Working Framework

An activity diagram in Unified Modeling Language (UML) provides a view of a system's behavior by describing the sequence of actions in a process. Flowcharts and activity diagrams are similar in that they show the flow between actions in an activity; however, activity diagrams can also show parallel or concurrent flows and alternate flows.

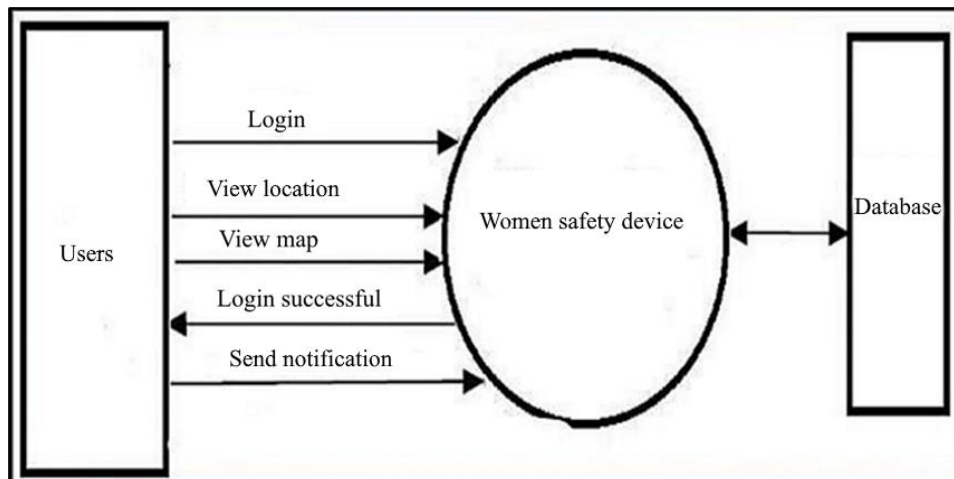


Figure 1. Data Flow Diagram (DFD).

Activity nodes and activity edges are used in activity diagrams to represent the flow of control and data between actions.

Figure 2 depicts the UML Activity Diagram, which provides the working framework of the anti-molestation device.

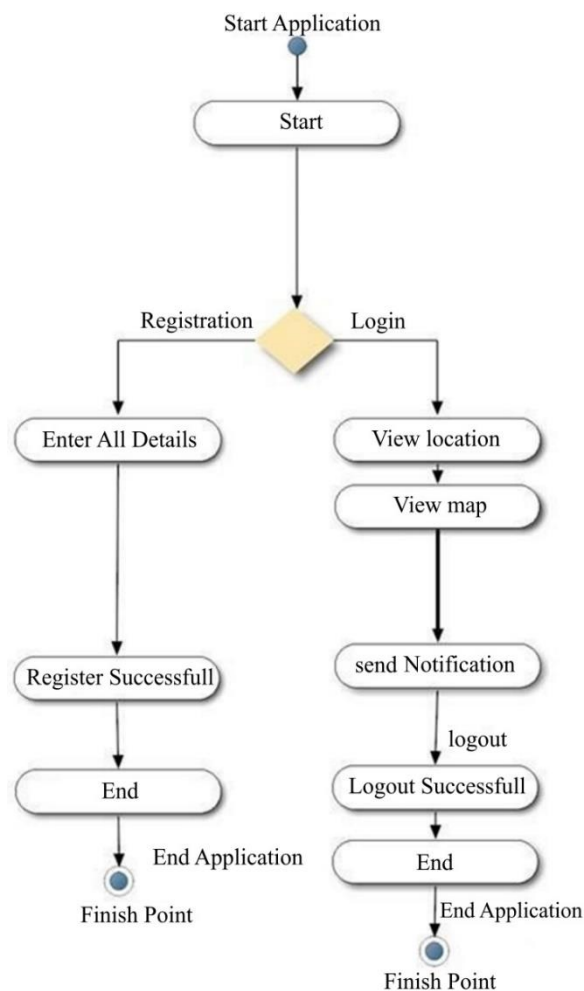


Figure 2. UML Activity Diagram User.

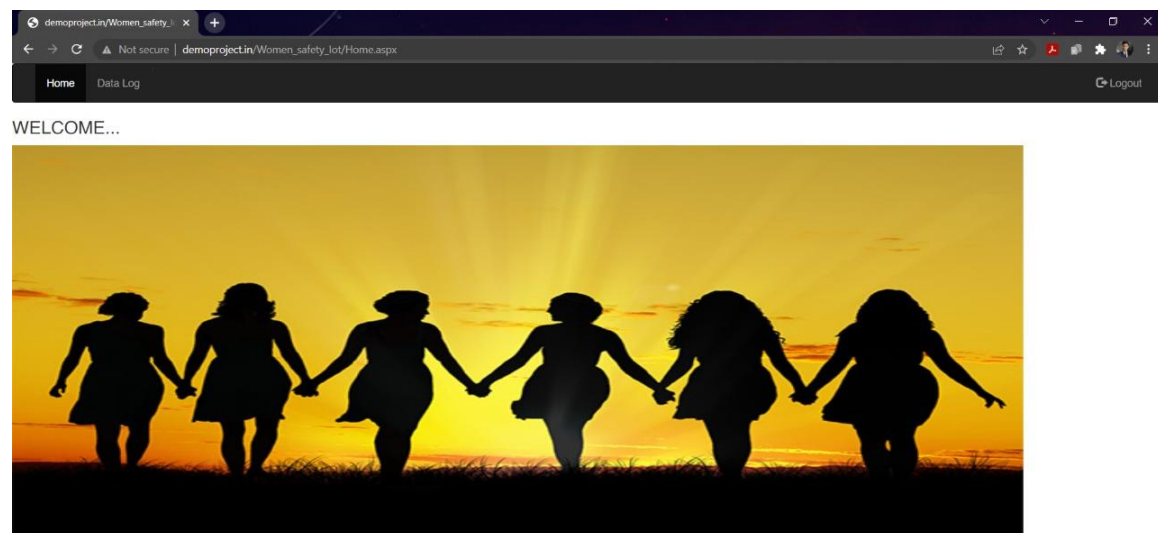


Figure 3. Home page authenticates the user by Login id and password.

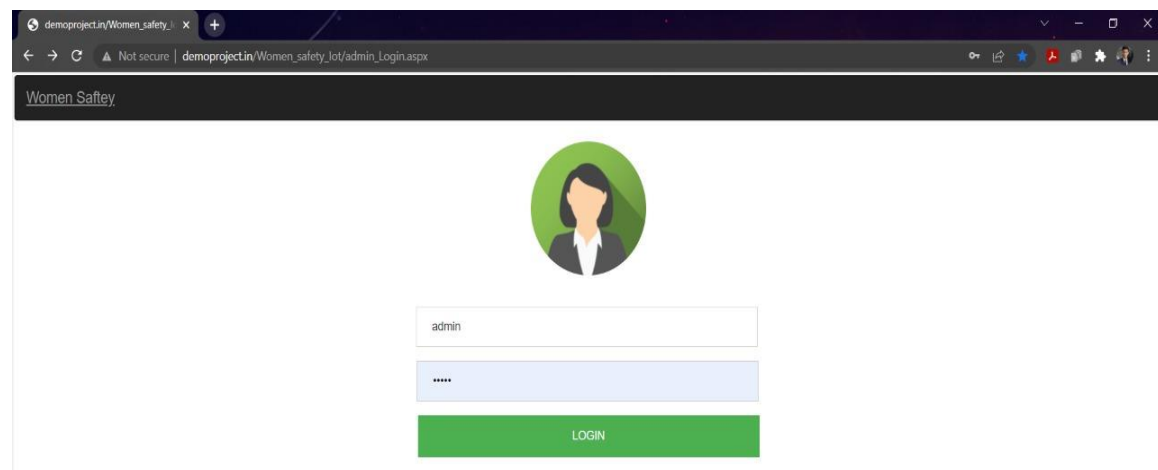
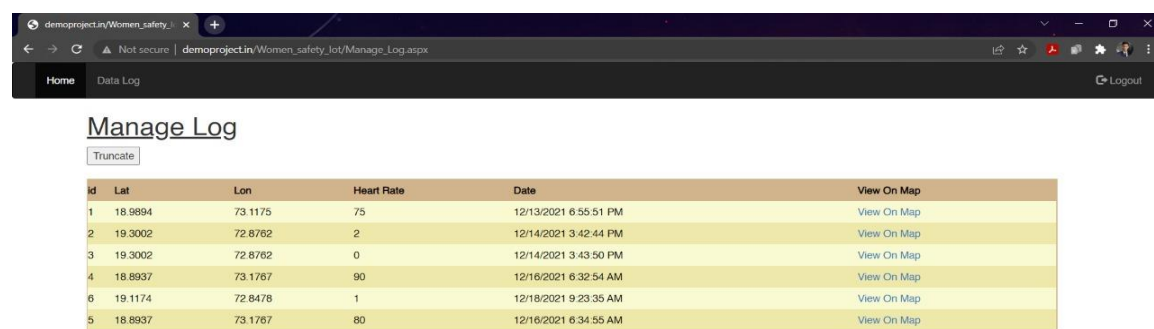


Figure 4. Login page stores and displays the data of current.

RESULT

Below here, we have discussed the result of our study. Figure 3 shows the home page where user can login by id and password on the web page, the login page displays various data (Figure 4). The user can check all the details by location (Figure 5).

As well as previous emergency calls by the user with details like date, location and heartbeat. User can check his location on the graph (Figure 6).



Id	Lat	Lon	Heart Rate	Date	View On Map
1	18.9894	73.1175	75	12/13/2021 6:55:51 PM	View On Map
2	19.3002	72.8762	2	12/14/2021 3:42:44 PM	View On Map
3	19.3002	72.8762	0	12/14/2021 3:43:50 PM	View On Map
4	18.8937	73.1767	90	12/16/2021 6:32:54 AM	View On Map
5	19.1174	72.8478	1	12/18/2021 9:23:35 AM	View On Map
6	18.8937	73.1767	80	12/16/2021 6:34:55 AM	View On Map

Figure 5. The user can also manage the logs.

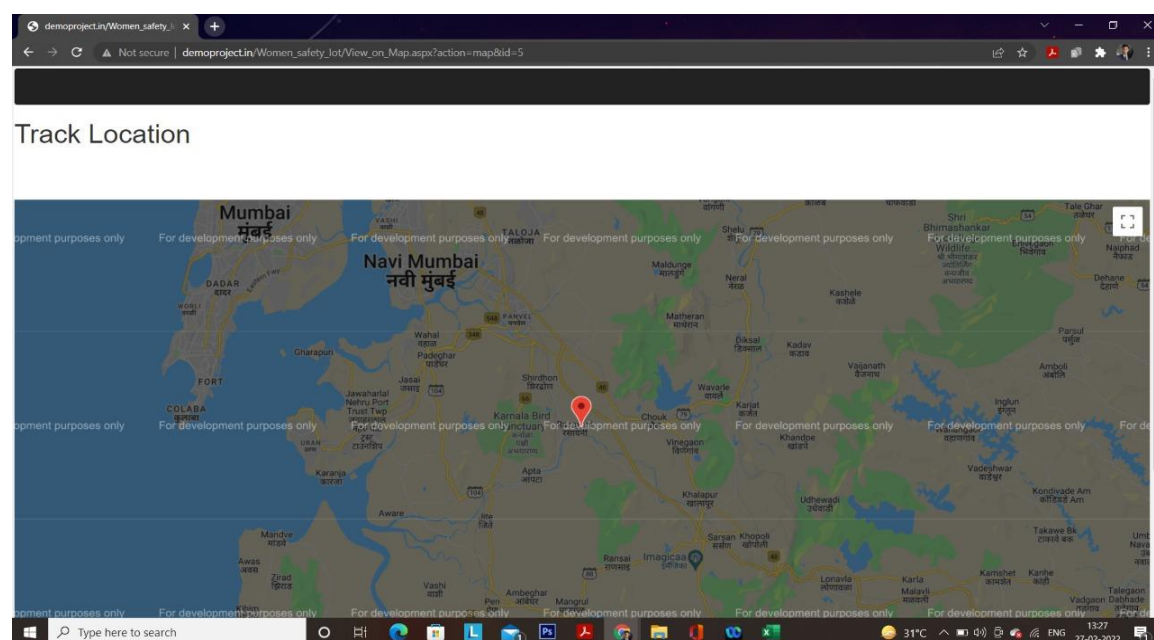


Figure 6. Track location.

CONCLUSION

In this project, we have developed a conceptual portable device with a touch sensor that detects the presence of an event when the user presses the button. The device can also directly notify law enforcement agencies, allowing them to take legal action against the perpetrators. In addition, the device can send the victim's current location to the nearest police station and to the family and friends by using GPS system, allowing the victim to be rescued. The device is extremely user-friendly, and people of all skill levels can use it without difficulty and at a low cost.

REFERENCES

1. Venkatesh K, Parthiban S, Kumar PS, Kumar CV. IoT based Unified approach for Women safety alert using GSM. In 2021 3rd International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV). IEEE; 2021 Feb 4; 388–392.

2. Rajesh Kannan M, Jyothsna K, Aparna TS, Anjali T, Meera M, Amrutha SD. IoT-Based Women Security System. In *Inventive Communication and Computational Technologies*. Singapore: Springer; 2020; 1369–1378.
3. Nandita Viswanath; Naga Vaishnavi Pakyala; G. Muneeswari. Smart foot device for women safety. 2016 IEEE Region 10 Symposium (TENSYP). 9-11 May 2016; Bali, Indonesia: IEEE; 2016.
4. Hanif MI, Ahmed S, Akanda W, Barman S. Anti-Molestation: An IoT based Device for Women's Self-Security System to Avoid Unlawful Activities. *International Journal of Advanced Computer Science and Applications (IJACSA)*. 2020; 11(11).
5. Toney G, Jabeen F, Puneeth S. Design and implementation of safety armband for women and children using ARM7. In *2015 international conference on power and advanced control engineering (ICPACE)*. IEEE; 2015 Aug 12; 300–303.
6. Khandelwal T, Khandelwal M, Pandey PS. Women safety device designed using IOT and machine learning. In *2018 IEEE Smart World, Ubiquitous Intelligence & Computing, Advanced & Trusted Computing, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovation (SmartWorld/SCALCOM/UIC/ATC/CBDCom/IOP/SCI)*. 2018 Oct 8; 1204–1210.
7. Sumathy B, Shiva PD, Mugundhan P, Rakesh R, Prasath SS. Virtual Friendly Device for Women Security. *J Phys Conf Ser, IOP Publishing*; 2019 Nov 1; 1362(1): 012042.
8. Jesudoss A, Nikhila Y, Reddy TS. Smart solution for women safety using IoT. *Int J Pure Appl Math*. 2018 Mar 22; 119(12): 43–9.
9. Manu Chopra, Hitendra Singh. A young inventor, invents anti-molestation device for women [Online]. Available from <http://bharatroxx.blogspot.com/2013/10/a-young-inventorinvents-anti.html>
10. Ranganadh A. Women Safety Device with GPS Tracking and Alerts. In *Innovations in Electrical and Electronics Engineering*. Singapore: Springer; 2020; 797–805.