Development of GPS-based Vehicle Tracking System that Achieves a Secure Tracking and Monitoring of the Whereabouts of a Vehicle

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Abstract

Every human on this planet is working hard for a comfortable living and wants to safeguard his investment that he has made in his day to day work. Ultimately, at the end of the day we all seek for security of life and our belongings. The major question to ask your self is we really secure? The world is not perfect and we are susceptible to the dangers that exist in the society hence the urge to feel protected and safe is fulfilled by the use of hidden cameras. A hidden spy video camera can be available anywhere. We should be conscious about this aspect, because we might be in a particular place, where our actions will be recorded without us being aware of it. Unfortunately, the very reasons that make this device so effective can also lead to its misuse by some. Victims" lives are bust through the same technology that should have been used to make people feel secure. There should be some way or technique which can help the person from attackers to maintain their privacy. This will helps victims to avoid attack and it also helps to police to reach that place as fast as possible for provide help to victim and save her from attack.

As a prelude to analyzing this discourse that excludes women's physical survival and safety, let us take a quick look at some of the things we include under the 'violence against women' (henceforth, VAW) rubric. Women experience physical insecurity both by virtue of their position within a given socio-economic structure and by virtue of where they find themselves physically. This system can be positioned in public places such as railway stations, bus stands, foot paths and shopping mall, where women are commonly experiencing attacks.

I.   Introduction

Women all over the world are facing much unethical physical harassment. Women and girls experience and fear various types of physical violence in public spaces, harassment to other abuses including femicide. It happens on streets, public transport and parks, in and around schools and workplaces, in public sanitation facilities and water and food distribution sites, or in their own neighborhoods. In India, every day more than 30 women were murdered and many are suffering austere mental and physical trauma. Violence against women are among the most under-reported crimes worldwide because of the social stigma attached to the nature of the crime. The best way to minimize your chances of becoming a victim of violent crime (robbery, physical assault, domestic violence) is to identify and call on resources to help you out of dangerous situations. These Android apps put those resources at your fingertips quickly, and several of them have both free and premium versions. Whether you're in immediate trouble or get separated from friends during a night out and don't know how to get home, having these apps on your phone can reduce your risk and bring assistance when you need it

Women are adept at mobilizing diverse groups for a frequent cause. They often work across racial, sacred, opinionated, and intellectual divides to encourage serenity. We are all aware of importance of women's security, but we must recognize that they should be well secluded. Women's are not physically powerful as compared to men, in crisis situation a helping hand would be a relief for them. The best way to minimize your chances of becoming a victim of violent crime is to identify and call on resources to help you out of unsafe situations. Whether you're in instant trouble or get separated from friends during a night out and don't know how to get home, having these apps on your phone can diminish your risk and bring assistance when you require it. Although several were formerly developed for 2 students to reduce the risk of physical attack on campus, they are also suitable for all women.

Whether you're in immediate trouble or get separated from friends during a night out and don't know how to get home, having these apps on your phone can reduce your risk and bring assistance when you need it. In the light of recent outrage in Delhi which shook the nation and woke us to the safety issues for our daughters, people are gearing up in different ways to fight back.A host of new apps has been developed to provide security systems to women on their phones. Our app is one of them. The current date, time, longitude, latitude, altitude,

speed, and travel direction / heading among other data, are provided by the module and can be used in a many applications including navigation, fleet management, tracking systems, mapping and robotics. The module can support up to 51 channels. The GPS solution enables small form factor devices which deliver major advancements in GPS performances, accuracy, integration, computing power and flexibility. They are used to simplify the embedded system integration process

The basic aim of the system is to develop a low cost solution for GPS based women tracking system (women safety system) which can applied to various domains of the industrial and personal use just by using the very common mean i.e. mobile with android enabled. The main objective of the system is to track the current location of the person, which has an android enabled mobile by extracting the longitude and latitude of that target person. The primary objective of our system is to track the person and plot the location on real time system like Google map.

The device will remain invisible to the offender and yet can easily be triggered by its user with multiple options to ensure secure communication. This device provides flexibility in design so it can be easily worn, and integrates more than 15 features pertaining to women's safety and security. The current devices in women security are self- operating. There can be conditions when the victim is not able press a switch or application button in her mobile phone. The self-security devices for women may not affordable for all because of its cost and complexity. 3 Here comes the importance of a centralized device which can ensure the safety all women in our society.

The automatic recognition of facial expressions has been an active research topic since the early nineties. There have been several advances in the past few years in terms of face detection and tracking, feature extraction mechanisms and the techniques used for expression classification. Facial expression recognition is concerned with the recognition of certain facial movements without attempts to determine or imagine about the underlying emotional state of the agent. For example, facial expressions may result from physical exertion rather than emotional state; in this case, emotional state is hidden or overridden from expressing itself through the face. For this reason, some have argued that facial expression interpretation must rely on more than just visual information. A beginning acquisition step detects the face and crops the image so that the facial features are aligned. This step may also determine head pose but nearly all techniques assume a frontal view. This step also involves the detection of a face.

In the recent mobile computing devices, the most powerful and increasing device is SMARTPHONES and it offers various methods of localization. Integrated GPS receivers, or positioning services based on nearby communication infrastructure (Wi-Fi access points or base stations of cellular networks), enable users to position themselves accurately, which has led to a wide offering of Location-based Services. They are used in a variety of contexts, such as health, indoor object search, entertainment, work, personal life, etc. It includes services to identify a location of a person or object, such as discovering the nearest banking cash machine or the whereabouts of a friend or employee. Such services can be queried by users to provide real-time information related to the current position and surroundings of the device. Each time an LBS query is submitted, private information is revealed. Users can be linked to their locations, and multiple pieces of such information can be linked together. That can be profiled, and leads to unsolicited targeted advertisements or price discrimination. The habits, personal 4 information, religious beliefs, and political affiliations of a person can make the target of blackmail or harassment by the other person. To avoid this kind of problems, we have developed and evaluated MobiCrowd. MobiCrowd is a scheme that enables LBS users to hide in the crowd and to reduce their exposure while they continue to receive the location context information they need.

Android is the first truly open and comprehensive software platform for mobile devices, it is a comprehensive software to run a mobile phone but without the proprietary obstacles that have stuck mobile modernization. Linux Kernel motorizes it. This is the first complimentary platform which is robust and is expected to gain much popularity. The idea originated from Android-Mobile Application Development. The current system is developed based on android platform. Android is an open source software platform and operating system for mobile devices. It is based on the Linux kernel. It was developed by Google team and allows writing managed code in the Java language. There are number of technologies and the process presented with an opportunity such to create a foundation for future development of actual Android-based hardware with the inputting and tracing functions built in it.

II.   LITERATURE REVIEW
ROBUST FACE DETECTION SENSITIVITY ANALYSIS

This paper describes a face detection framework that is capable of processing images extremely rapidly while achieving high detection rates. There are three key contributions. The first is the introduction of a new image representation called the "Integral Image" which allows the features used by our detector to be computed very quickly. The second is a simple and efficient classifier which is built using the AdaBoost learning algorithm (Freund and Schapire, 1995) to select a small number of critical visual features from a very large set

of potential features. The third contribution is a method for combining classifiers in a "cascade" which allows background regions of the image to be quickly discarded while spending more computation on promising face-like regions. A set of experiments in the domain of face detection is presented. The system yields face detection performance comparable to the best previous

DOWRY AS A FACTOR OF VIOLENCE IN MARRIAGE

A review of cases reported at the Family Counseling Centers (FCCs) in Chandigarh shows that dowry is a significant factor for marital discord. 36.2% ofthe married women who approached the FCCs complained of dowry-related violence. This violence manifested itself in physical, emotional and economic forms. Most women turned to their parental families for help against this violence (29.3%), and only 12.1% approached the police and even fewer, 10.3%, approached NGOs. In an overwhelming majority of cases (44.8%), the parents submitted to the dowry demand; only 12.1% filed a complaint with the police and just over 15% sought separation or divorce. Clearly, dowry is a deep-rooted social evil, whose victims are either reluctant or unable to get redress from the law enforcement agencies meant to support them or the NGOs.

GESTURE RECOGNITION USING GAUSSIAN MIXTURE MODEL

This paper investigates a real time gesture recognition system which recognizes sign language in real time manner on a laptop with webcam. Real time performance is achieved by using combination of euclidistance based hand tracking and mixture of gaussian for background elimination. In this paper gesture reorganization is proposed by using neural network and tracking to convert the sign language to voice/text format.The aim of research to develop a gesture recognition hand tracking (gr-ht) system for hearing impaired community. The experimental result shows that the proposed gr-ht systemachieves satisfactory performance in hand gesture recognition.

AN INTELLIGENT SECURITY SYSTEM FOR VIOLENCE AGAINSTWOMEN

This paper describes about an intelligent security system for women. Women all over the world are facing much unethical physical harassment. This acquires a fast pace due to lack of a suitable surveillance system. Our project is a venture to resolve this problem. The systems mainly consist of a monitoring device, the output of which is processed to identify insecure environments. Upon identifying unsafe environments system will send message to near-by control room also turn on alarmsplaced all around the area letting help from others. This system can be positioned in public places such as railway stations, bus stands, foot paths and shopping mall, where women are commonly experiencing attacks. We really believe that this endeavor will make a difference in the life of many and dream about seeing this world with individuals walking fearlessly.

ONLINE FINGER GESTURE RECOGNITION USING SURFACE ELECTROMYOGRAPHY SIGNALS

The analysis on the online finger gesture recognition using multichannel surface electromyography signals was explored in this paper. Nine types of gestures were applied to be identified, involving six kinds of numerical finger gestures and three kinds of hand gestures. The time domain parameters were extracted to be the features. And then, the probabilistic neural network was utilized to classify the proposed gestures with the extracted features. The experimental results showed that most of gestures could acquire the acceptable classification performance and a few elaborate gestures were hard to acquire the effective identification.

EXISTING SYSTEM

Many security applications were developed especially for women. Some of the applications are Guardly, Fightback, OnWatch, Street Safe,Guardly **.** This app is developed for women safety intention. In these apps you have to give your details in profile sheet e.g. birthdate, tallness, weight, eye-color, blood group, hair-color, etc.

DISADVANTAGES

The current devices in women security are self- operating. There can be conditions when the victim is not able press a switch or application button in her mobile phone. The self-security devices for women may not affordable for all 9 because of its cost and complexity. Here comes the importance of a centralized device, which can ensure the safety all women in our society.

PROPOSED SYSTEM

Here we focus on a security system that is designed solely to serve the purpose of providing security to women so that they never feel helpless while facing such social challenges. The system consists of various modules such as GSM shield (SIM 900A), Arduino ATMega328 board, GPS (GY-GPS6MV2), a set of pressure sensors for activation and power supply unit. But we are using the Global Positioning system concept.

In the proposed system, if the user of this app feels unsecure and helpless at any time then by shaking her mobile, she can send alert message to their friends, family members, relatives who is nearer to her location. It uses Global Positioning System (GPS) to identify the locations of the user and her contacts. In addition, the images of the location were captured automatically and send to the contacts as mail. Because of using GPS to identify the location it is very accurate about the places. These applications are very helpful for women, who will have some emergency contact selected and it will also retrieve GPS information. In case of emergency, a panic button provided in this app will send SOS message to all the trusted contacts immediately and also inform the correct GPS location of the person facing trouble. Easy-to-operate electronic device exists that will help girls and women to trigger communication with family and police when in distress. The use of sophisticated components ensures accuracy and makes it reliable. The application provides with all the features which will leave no stone unturned to help the victim in any kind of emergency situations.

ADVANTAGES
    If the user is in danger or they feels unsecure in any situation, they can shake their mobile. This is a signal to others saying we are in danger. The attackers don't 10 know why they are shaking their mobile. So, it is very safe and secure to women for indicating their dangerous situation. This system is very helpful for the users who are in dangerous or critical situation.

SYSTEM IMPLEMENTATION
    System implementation is the final phase i.e., putting the utility into action. Implementation is the state in the project where theoretical design turned into working system. The most crucial stage is achieving a new successful system and giving confidence in new system that it will work efficiently and effectively. The system is implemented only after thorough checking is done and if it is found working in according to the specifications.
    It involves careful planning, investigation of the current system and constraints on implementation, design of methods to achieve. Two checking is done and if it is found working according to the specification, major task of preparing the implementation are educating, training the users.
    The implementation process begins with preparing a plan for the implementation of the system. According to this plan, the activities are to be carried out, discussions made regarding the equipment and resources and the additional equipment has to be acquired to implement the new system. The most important in implementation stage is, gaining the users confidence that the new system will work and be effective. The system can be implemented only after through testing is done. This method also offers the greatest security since the existing system can take over if the errors are found or inability to handle certain type of transactions while using the new system.

SYSTEM IMPLEMENTATION
USER INTERFACE AND MOBILE SHAKING
IDENTIFYING THE LOCATION
SENDING SMS
AUTOMATIC PICTURE CAPTURING AND SENDING EMAIL

USER INTERFACE AND MOBILE SHAKING
    The user interface design is to be designed for providing the userfriendly interface. In the user Interface module, for the first time, the user has to give the details such as name, Email ID and mobile number of their friends. In the settings of the app, the user has to specify the threshold values. If they are alone they might set their threshold value to the lowest level. When the user is in danger, they should shake their mobile. Because of the lowest threshold level, the shaking capacity of the mobile also be lesser and the app starts to work automatically. If the user is in very safe situation, then the threshold value might set to highest level.

IDENTIFYING THE LOCATION
    The **Global Positioning System (GPS)** is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites .The GPS in our smartphones always in ON position only .When the mobile shakes, the app is switched ON and it prompts the GPS to track the user's location. The location of the user should be automatically identified by the GPS. The Latitude and Longitude values are calculated and it calculates the exact position of the user.

SENDING SMS

In this module, based on the user's location the GPS calculates their latitude and longitude values. This app finds the user's friends contact and through GPS calculates the friend's location. All the values are stored in the server. The app compares the friends and the user's Latitude and Longitude values. If the values reached nearer or same or less equal, the GPS finds the location of the user's friends. In this app finds their friends location, which is nearer to the user using GPS. Then it sends the user's location as message alert to their friends who are nearer to the user.

AUTOMATIC PICTURE CAPTURING AND SENDING EMAIL

In this module, the camera device in the user's mobile gets automatically switched on and captures the location as images. The captured image is then sent to the contacts who are nearer to the user as Email. Through this email, we can identify the victim.

III. CONCLUSION

In this Project, we proposed the women's security concept. This project can be implemented in different areas of security and surveillance. The system can perform the real time monitoring of desired area and detect the violence with a good accuracy. In a master console using the very high resolution camera and dedicated software for this application make system prefect to use in our public places. The gender detection algorithm and motion tracking will more precise for future real time monitoring application to prevent the generation of false alarm. More number of emotions of victim as well as suspect with precise accuracy makes the system robust in this application. It can be concluded by saying such a system can revolutionize the present scenario of women safety.

The proposed design will deal with critical issues faced by women in the near past and will help to solve them with technologically sound equipments and ideas. This system can overcome the fear that scares every woman in the country about her safety and security.

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