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WOMEN'S PERSONAL SECURITY (WPS) USING GPS TRACKER

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ABSTRACT:

Sexual assault is the fourth most common crime against women in India. In a year, average of 3,000+ women are being sexually assaulted. This issue is not only faced by our country, but also many countries like Brazil, Hong Kong, Italy, etc. Our responsibility here is to provide a product(WPS) that can be wearied by the ladies of any age that provides her a way to get help from the police & trusted contacts to her current location as soon as possible, thus saving her life. This product is a GPS device which can be operated by the user depending upon the situation, where it gives an option to the user to activate the device & send the alert or reject the alert. An alert will be in the form of a message. The product is secured with a password lock in order to ensure the product stays with the user & also the lock security ensures that the belt can be removed/unlocked only by the user with the password set by the user. Our product coated with a material called "Acrylite" which has an unbreakable characteristic to ensure that the product is safe & sound from harm. The K Nearest Neighbor algorithm is used to search the nearest police station and send the alert. When the user feels she is in danger, she presses the button from the device & the GPS device from the product sends the women's location to the police control room & nearby police stations, family & friends at the time of crime and ensure the help gets on time & hence saving her before the assault takes place. The Product consist of different types of alerts which is going to play a crucial role in getting help for the women who is in dangerous situation of being sexually assaulted. The details about the types of alerts are being discussed in the proposed system session. The concept of having the different types of alert is to provide a backup incase if one of the alert fails.

Keywords: GPS Device, K Nearest Algorithm, Password lock, Acrylite material, Alerts.

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1. INTRODUCTION

Global Positioning System is often used by civilians as a navigation system for them to move to a particular place which they might have not visited yet. Nowadays, the GPS system is available in the mobile phones which is easily accessible by the civilians at any time they want. In order to get their location, they must first have GPRS/Net Connection or commonly called Mobile Data. GPS not only tracks the user location, but also helps in navigating to a particular place as well. The navigation marks a route on the map, which helps the user to understand "Which way the user must go to reach the destination". Therefore, by using GPS to track the women's location, it is easy to save her before she is sexually assaulted.

The password lock belt weights about 190 grams which is easy to wear with comfortability. The material of the belt strap is made out of Nylon which is a greater durability. The length of the belt can be adjustable which fits any hip size. The Password lock system in the strap belt will be set by the user. The lock system is a numbered system lock where a combination of number will lock & unlock the belt.

Acrylite FF acrylic sheet is a continuously manufactured acrylic sheet. It is produced by an innovative process, resulting in a sheet offering the easy handling and processing of extruded sheet, along with the high optical characteristics and low stress levels expected of cast products. The Acrylite FF is a colorless sheet which has the following characteristics;

- Acrylite FF sheet is a lightweight, rigid and weather-resistant thermoplastic.
- Acrylite FF sheet is dimensionally stable and resistant to breakage, and can be easily sawed, machined, heat-formed and cemented.

By integrating the above mentioned components along with the algorithm, it is possible to save a woman from sexual assault and thus saving her life.

2. SYSTEM ANALYSIS

2.1 EXISTING SYSTEM

The existing system runs on the following ways with certain cons;

Based on request-response scheme: This scheme works on an environment where one person has to track the user by sending a message to tracker & get latitude & longitude of the user i.e. the women.

Vulnerability of the product: The similar product existing in foreign country does not provide any security to the product, thus making it vulnerable. For example, the product can be easily damaged by hitting with an object.

Notification regarding the alert: Does not notify the user whether the alert has been sent, which means that the user will be in a state where she doesn't know whether the help will arrive or not.

Application oriented, not product oriented: There is an application with similar concept that runs on mobile phones. Hence there is no product existing for this issue.

2.2 PROPOSED SYSTEM

The Proposed system works in the following ways with certain pros;

Analysis & Alert scheme: This scheme is applicable to the women. It means that the user i.e. the women can analyze the situation first & then can send an alert or cancel the alert as well.

Secured Product: The product is secured with acrylite material which poses unbreakable characteristics, which means the criminal cannot damage the product & also since the product is integrated with the password lock belt, only the user can unlock the belt & thus, it is not removable by the criminal who commits the assault.

User Notification: Once if the alert has been received & read by the police & trusted contacts, the device notifies the user about the alert has been sent through vibration.

Online System: Alert the police control room as well as the police stations that are nearby the women's location through K Nearest Neighbor Algorithm & trusted contacts using specifically created mobile & desktop app, that shortens in the arrival of time of help. This will act as an online system for our product.

Offline System: Alert the police control room & trusted contacts through a SMS if the online system fails to work. Since everything is not 100% guaranteed, we are providing a backup as well & this system will act as an offline system.

First Product in the India: There is no specific product existing in India for this specific purpose against the sexual assault on woman, hence it makes our product has the first to be established in India.

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Our product contains two types of alert. They are as follows.

- Online Alert.
- Offline Alert.

An Online Alert which requires a net connection, where an online alert will be sent by pressing a button in the tracker unit. This process will first search for the nearest police station by using the K Nearest Neighbor algorithm & send the alert. If the search fails to get a nearby police station, then the alert will be forwarded to the Police control room, where the control room cops will lock the women's location and the inform the police stations about the location of the women for providing immediate help.

Now the police control room/station will receive the alert, they will lock the location & forward the location of the women into the patrolling police unit in that particular area, the patrolling unit now can arrive at the spot as they know the fastest way to get to the women's location as the patrolling unit are familiar with their area & routes.

Here the alert will be received to the specifically created mobile & desktop app which can be operated by the police, family & trusted contacts whenever they get an alert from the women in danger. The concept of adding family & trusted contacts is because even the police people commit crime, so in order to avoid that, an alert will be sent to the above mentioned people as well and also to ensure the help from either or both is received by the women on time.

When the alert is sent & seen by the police people, the tracker unit will now vibrate to inform the user that the alert sent was successful & intimates the user that the help is arriving. If the alert is not sent, the tracker unit will not vibrate.

If no internet connection is available, then an Offline Alert will be provided through a SMS which needs to done manually by the user by pressing another button in the tracker unit. Since every police area has a mobile number, their number will be fed into the tracker unit along with the trusted contacts which includes members of the family as well.

So when a woman is in danger, she will send the SMS alert by clicking the button which will send a SMS containing the latitude & longitude of the women's location along with a SOS message. Thus, there is a backup option available to ensure the user is safe & secure from harm.

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3. SYSTEM ARCHITECTURE

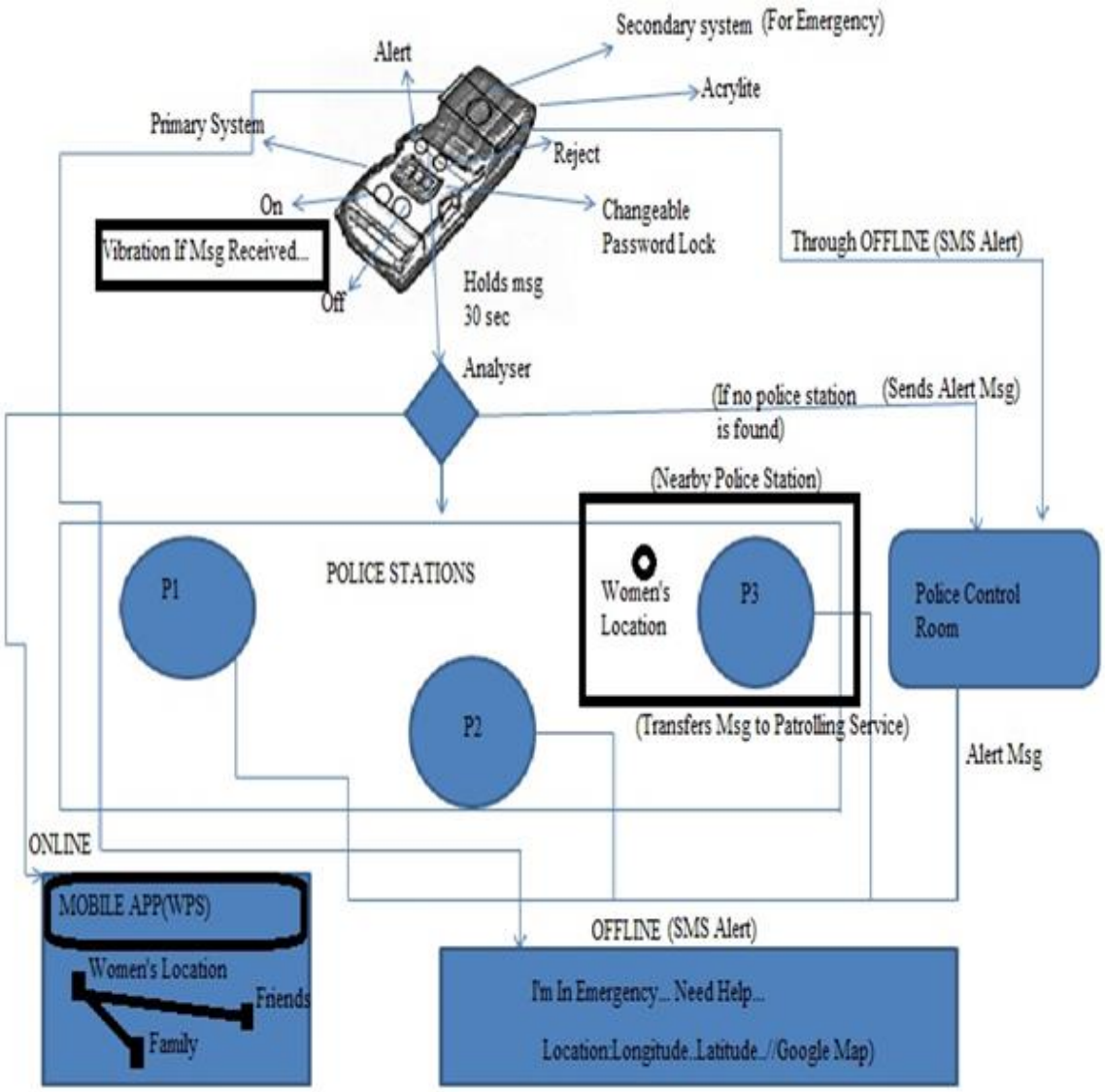

Figure 4: The WPS System Architecture.

4. IMPLEMENTATION

The modules describe about the various parts of the architecture in details. The modules involved in the system are described below.

1) Alert – Reject Module.
2) Online Analyzer Module.
3) Offline Module.

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4.1 ALERT-REJECT MODULE

The women analyse the environment & sends the alert signal. The alert signal notifies the police & trusted contacts, but does not allow further proceedings for the police as they require to forward the alert to the police patrolling units. It holds the further proceedings till 30 seconds, where the alert can be rejected.

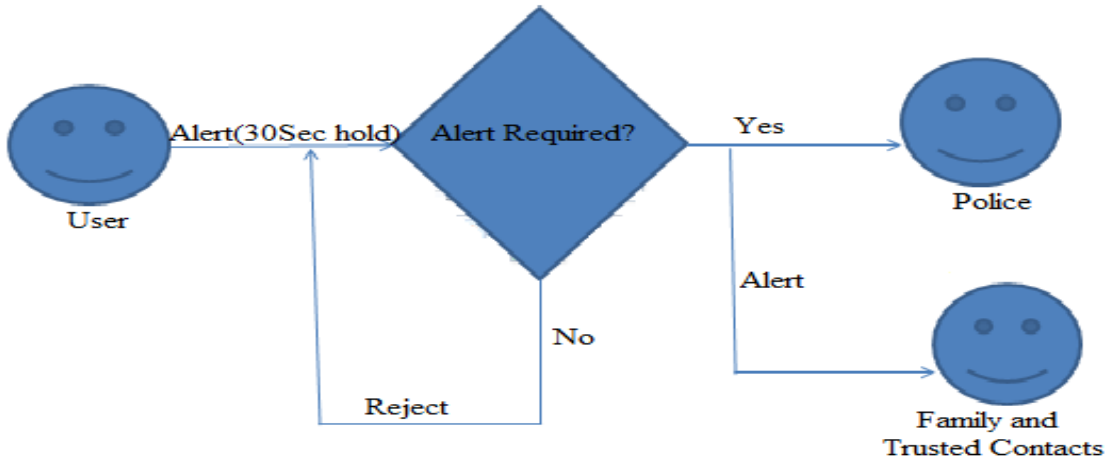

Figure 1: Alert – Reject Module Design.

4.2 ONLINE ANALYZER MODULE

This alert basically uses net connection. The purpose of this alert system is to find out the nearest police station from the women's location and get as soon as possible. The alert signal analyses the nearby police station using K Nearest Neighbor algorithm & sends the alert. A separate online alert will be sent to the family & trusted contacts apart from the police station alert.

If the alert signal does not find a police station, then it sends the alert to the Police control room, where the control transfers the necessary details to all the nearby police station from the women's location. Here all the alert will be received in the mobile app created for this purpose. So when the alert is received and read by the everyone mentioned above, then alert will be sent back to the tracker device to vibrate, if alert is not sent means, it will not vibrate.

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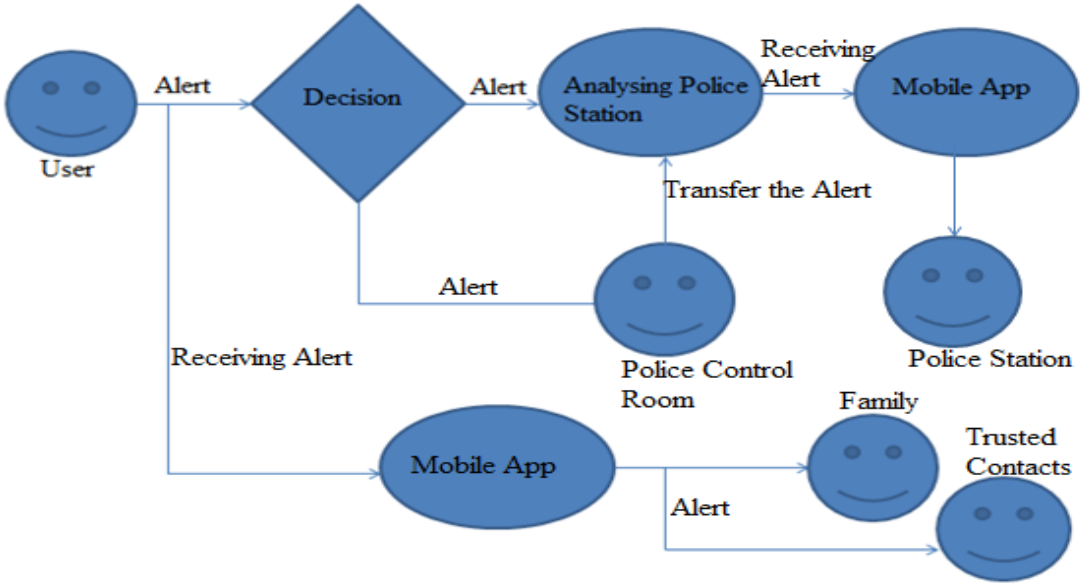

Figure 2: Online Analyzer Module Design.

4.3 OFFLINE MODULE

If the Online alert doesn't work, then Offline alert that is, a SMS is sent to the police control room, family & trusted contacts. So therefore this acts as a backup for the online alert system. If the user didn't receive any vibration acknowledgement means, the user has to press the SOS button in the device to establish the offline alert.

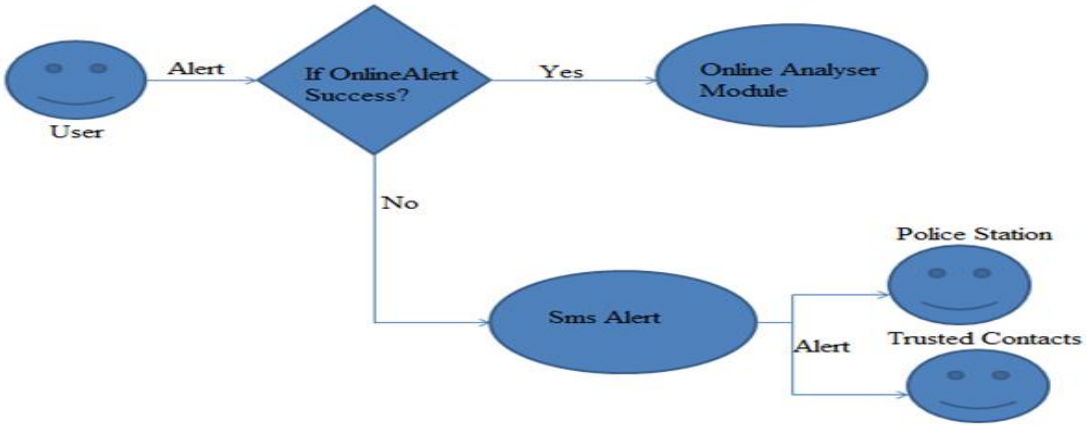

Figure 3: Offline Module Design.

5. CONCLUSION

By implementing our product, we can provide immediate help to the women who is in a dangerous situation, thus saving her before the criminal commits the crime. In this way, we can save a lot of women from sexual assault which is the objective of our project. The proposed system is much better when compared to the existing systems, in terms of faster arrival of help, product security, durability, backup alerts, etc.

The future goal of the project is to establish our product to all the countries, that helps each and every woman around the world, providing her safety against sexual assault. And also to request the Indian Government to provide financial support for our project when establishing our product to all the countries and most importantly to enhance the punishment (family planning) for the person who tried to commit the assault against the women, so that the person who committed the crime & the other criminals will never ever commit any sexual assault against the women!

6. REFERENCE:

1. Kanagaraj. S.A. Dept. of Inf. Tech. Anna Univ, Chennai, India, “Cheeka: A Mobile application for personal safety”, page : 289-294, Date of Publication : 20-23 Oct, 2013.
2. Langer. M, “Deeply coupled GPS/INS integration in pedestrian navigation systems in weak signal conditions” page : 1-7, Date of Publication : 13-15 Nov 2012.
3. Ozen. Y, Computer Engg, Yalova, Turkey, “Andriod based energy aware real-time location tracking system”, page : 842-844, Date of Publication : 7-10 July 2015.
4. Saranya. J. Rajalakshmi Eng.Coll, Chennai, India, “Implementation of children tracking system on android mobile terminals”, page : 961-965, Date of Publication : 3-5 April 2013.