Nirbhayam (Safety through Smartphone)

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Abstract: - **We belong to the country which always focuses on giving respect to others and that especially includes women. There is a saying that "a true measure of a man is how he treats someone who can do absolutely no good to him", but on the other hand, we are hearing about the incidences which happen to them on a daily basis. Women are facing problems like rape, sexual harassment, domestic violence and the list goes on. Efforts are made by the government to resolve this problem, but they failed to bring satisfactory results as the number crimes are escalating rapidly day by day. After hearing about several rape cases, even the people of this country tried to resolve the problem but it still persists. The police department is trying their level best to improve the situation, but it's incapable to do so because of the lack of technology provided to them. Mainly the scenario is that the rescuer is far away from the sight of the incident which in turn results in the mishap to happen. So, here we are proposing a unique prototype of iOS mobile application, in which we will be able to consume the handy technology that has become the daily driver to go through our day. With the use of our application, everyone will be able to help the victim who is in an unfavorable situation irrespective of gender and age.**

*Keywords***: - Mobile Computing, People safety, iOS Application Development, Cloud Computing.**

I. INTRODUCTION

The unfortunate incidents happening with women and teenager are increasing day by day. Not only India but the whole world is suffering from these kinds of problems. There are problems like child abuse, rape, human trafficking and many more. No nation can rise to the height of glory unless your women are side by side with you. We live in a society where we talked about giving equal rights to everyone but we don't see that idea working. So whenever a new case comes everyone comes up with a new idea but the idea doesn't get implemented because of lack of resources and upgrading to the new technology. It will take our country a decade to upgrade to the technologies that are being used by the foreign Nations. As per analysis was done by UNWOMEN "35% of women worldwide have experienced either physical or sexual intimate partner violence or sexual violence by a non-partner at some point in their lives"[1]. This analysis was done on a worldwide basis so it doesn't mainly focus on India. As our country is divided into 29 states every state is having their own percentage of increase in rapes but unfortunately UP tops the list. There is an increase of 161 % in rapes in Uttar Pradesh as per the survey was done in the year 2014/15[2]. Even the so-called state capital isn't safe anymore; the incident that took place in 2012 had sent a shock wave throughout the nation. The girl name Jyoti Singh was beaten brutally and gang-raped by a group of 6 people which included a minor too [3]. As per the reports of UNODC there is a large increase in the cases of human trafficking between the years 2012-14. [4] Kailash Satyarthi who is a

Nobel Prize winner said that "According to a government report there is a case of human trafficking in every 6 minutes in India." [5] This is the statistic of the report in which the complaints are registered but there are many more cases which are not even reported. So from the above analysis, we can conclude that there is a need to revolutionize the system which was being used to track down the cases like these. The technologies which are currently in use are not capable of providing optimal results. According to the estimation from the Indian police, only 4 out of 10 rapes are reported, it is because of the conservative nature of the Indian society. All because of these reasons police is not able to take the required action against them. All because of the above-mentioned cases we have thought of giving a helping hand to the society by introducing our new application which is a prototype but soon will be available in the app store.

II. RELATED RESEARCH

There are many applications in the market right now which helps victims in the cruel incident. As a part of the survey, we have analyzed major applications which are trying their best to take the situation under control. Most of them are focusing more on sharing user's location with their family members and government authorities.

A. bSafe

This application is created by a company named 'Mobile Software AS'. The company mainly focuses on creating safety applications that come to succor when victims need them. The application provides features like GPS location sharing, alarm system, fake call, alert system. This

application is available for both Android and iOS platform. [6]

B. Kitestring

Kitestring was acquired by a company named 'Tep Wireless'. Kitestring works with a different perception. Kitestring is SMS based service. So, users don't need to install any application locally. Users need to register on their website to start the services. Kitestring doesn't need a smartphone to work, just SMS enable phone is all it needs. Kitesting is free to use for everyone but the user can also upgrade the program which provides some extra features. [7]

C. SafeTrek

SafeTrek was developed by college students. SafeTrek screen has a big safe button in the center. The user needs to press and hold the safe button if he/she feel scared. Once the user feels safe, release the button and enter a pin to deactivate the system. If fear becomes real just release the button and don't enter the pin and this will notify local police with user's current location. SafeTrek has widely used the application in the United States and it costs several bucks. [8]

III. PROPOSED SYSTEM

Our prototype application works on iOS 10.3 or higher. It mainly utilizes device's GPS to track the position of the user. So, while using the application for the first time user need to give access to the location system of the device. The application needs internet connection all the time to let itself work efficiently.

A. How it works

1) For the first time, the user has to create a new account which is a mandatory process for application to work. Existing user just need to log in while firing up the application for the first time. [Fig - 1]

2) Whenever the user feels scared or unsafe, he/she just need to tap 'Distress Button'. This will inform other nearby users. After tapping 'Distress Button'.   [Fig - 2] If the user feels safe then he/she can cancel the call for help by simply tapping 'Safe Now' button.

3) When the user will tap 'Next' button [Fig -2], the application will navigate to this screen. The user can see the victim's email address and the respective distance to reach the victim. Just by tapping the help entry user will show the victim's current location to the user. [Fig -3]

4) If the user wants to help the victim, then he/she will tap on 'Accept Request' button. [Fig - 4] This will open iOS's default maps with active navigation and will show the path with the shortest distance. [Fig - 5]

5) When the user will hit the start button, the maps will navigate the user to victim's location via the shortest possible path. [Fig - 6].
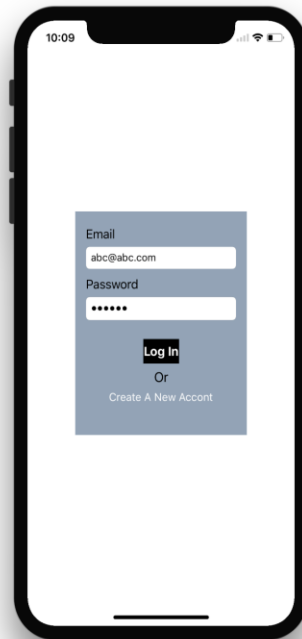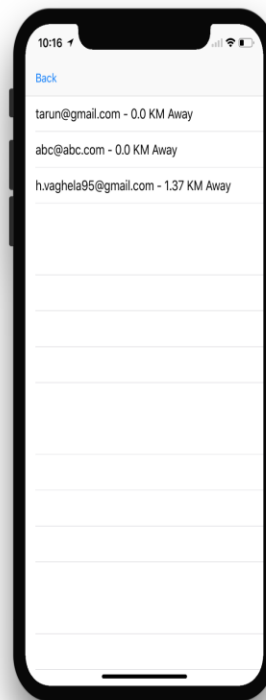

Login/Sign up
[Fig – 1]
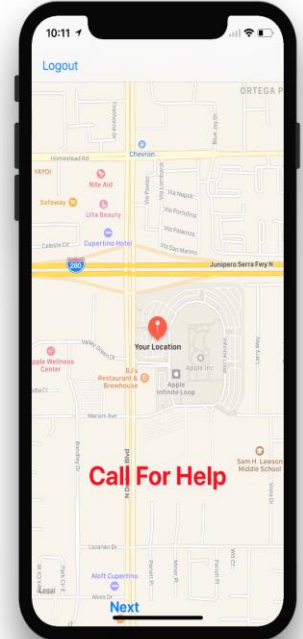
Distress Button
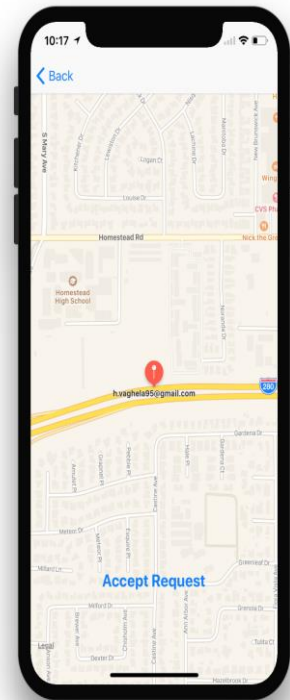*[Fig – 2]*

Victim's Information
[Fig – 3]

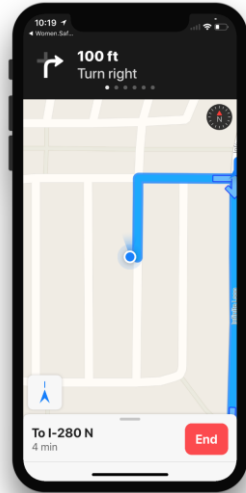*Victim's Location*
[Figs – 4]
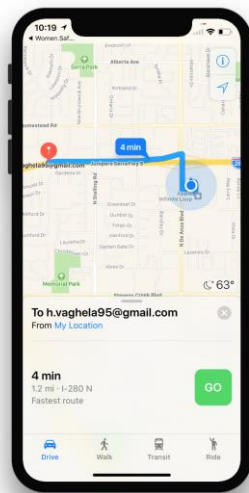
Default Map
[Fig – 5]

Navigation System
[Fig – 6]

A. Technical Specifications

The prototype application is made on Macbook Pro (2016) with the use of software Xcode version 9.0 and written in Swift 3.0. The prototype application consumes nothing in its ideal situations. Whenever the user triggers the system application starts utilizing data. The location of the user will only be synced whenever needed. As soon as user deactivates the system, the application will stop using user's location. This will provide privacy of user's location.

The user credentials are stored and confirmed on the cloud via means of 'Authentication' feature which is provided Firebase. Firebase stores user's email-id and password while registering a new user and confirm the credentials when registered user signs in.

When the user calls for help, his/her location (based on latitude and longitude) is stored in the 'Realtime Database' of Firebase. It takes very small amount of data to store location on cloud and 'Realtime Database' is so fast that it takes a fraction of seconds to sync user's current location on the cloud. If the user deactivates the system by pressing 'Safe Now' now button, then the application will delete the user's location from the cloud database which provides security to access of user's location.

The application calculates the respective distance between every user and victim, which is helpful to provide victim's location to nearby users. If the user's location is near to the victim's location, then the application will show the help-seeking victim's email-id with respective distance. All this process happens in real-time which is very important factor in a situation which is time sensitive.

B. Uniqueness

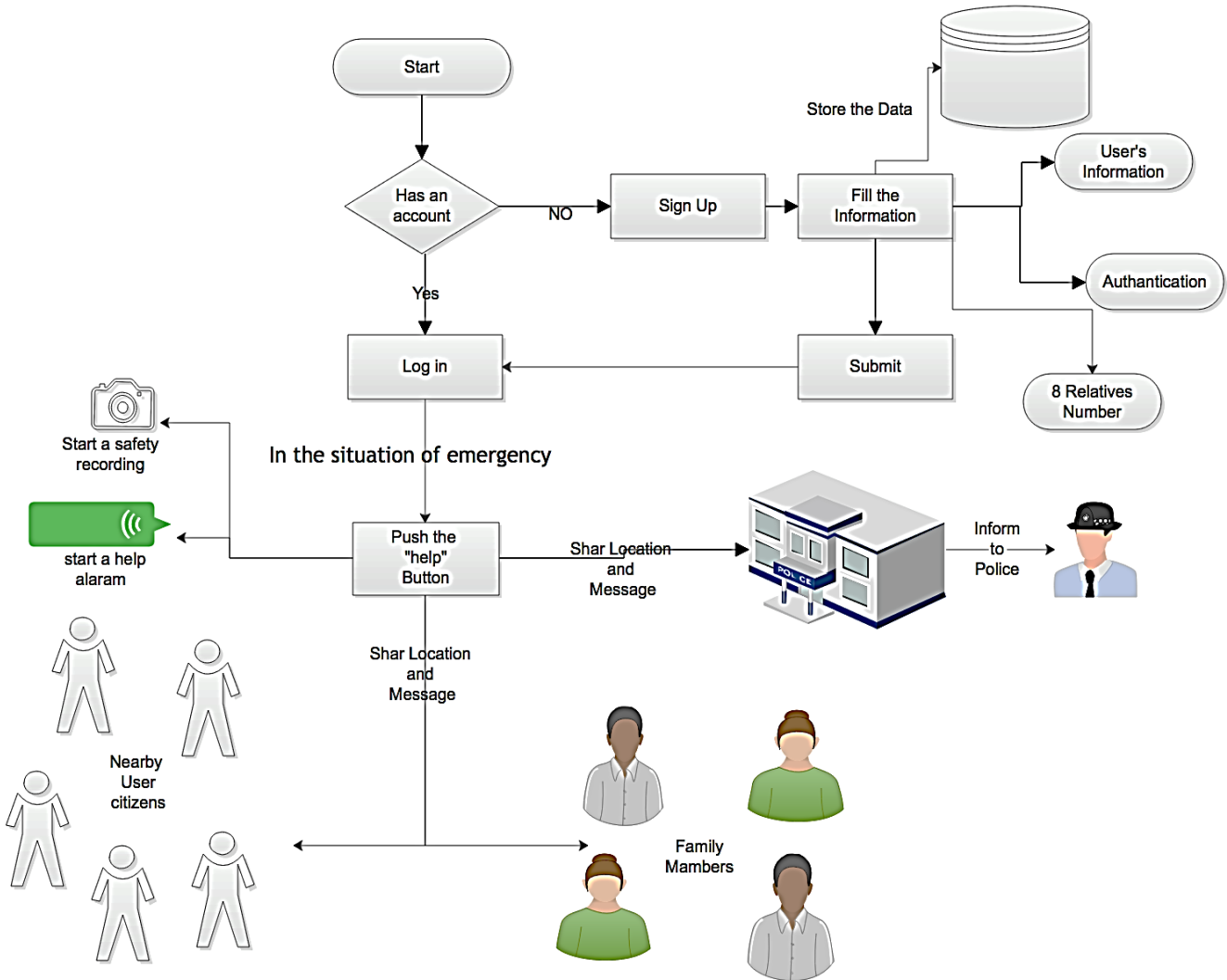The main drawback in other existing applications is that they lack some of the basic features which let rescuer reach the place of crime in time. Most of the times when helpers reach the place of mishap, the nasty incident has already taken place. Because of this time gap, many victims suffer a lot. Our main focus is to dwindle this time span between the rescuers to respond to the help. Our prototype application notifies nearby users who can help victim instead of wasting time to inform local authorities who may take a lot of time to reach the victim. [Table-1] shows the summarized comparison of our application with other when our application will be fully functional with future enhancements is shown. (The comparison as per the best of our understandings).

IV. FUTURE ENHANCEMENTS

As our current application is in prototype version, we are currently working to expand the functionalities of it. When the application will be fully functional it will also include following features.

• The application will be available for android platform with all functionality implemented.
• For the authentication of users, aadhar card details will be mandatory (for security purpose).
• The user needs to register with the details of their relatives and/or friends. When the user will be in problem his/her relatives and/or friends will be immediately informed of the current location of the user and an emergency message.
• Local government authorities (like police) will be informed with the current location of the user and an emergency message via a desktop application.
• The application will be voice assistance activated. It may be possible that user can't access the phone or may not be able to push button on the phone. In this case, voice assistance will recognize user's voice and it will automatically activate the system of the application. The application will play an emergency sound when the system will be activated by the user. This emergency sound can frighten the criminal and can force criminal to stop doing the crime.
• When the system will be activated by the user, the application will start to record audio and video via microphone and camera. This audio-video footage will be stored in both local device and cloud database. This feature can be very useful to identify criminals.
• On the basis of previously registered requests, the application will show every area according to their threat level. If in a certain area more number of users had registered help requests, then that area will have higher threat level than others. With the use of this feature, users can know the threat level of a certain area and can keep themselves safe.
• The application will be able to useful for other emergencies like fire and medical.

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[Fig- 7] is the block diagram of the application when it will be fully functional.

Block Diagram [Fig - 7]

[Table - 1]

Application	Distress Button	Inform to Government Authorities	Inform to User's Relatives	Inform to Near-by Users	Navigation to Victim's Location	Voice Assistance
bSafe	Yes	No	Yes	No	Yes	No
Kitestring	No	No	Yes	No	Yes	No
SafeTrek	Yes	Yes	Yes	No	Yes	No
Nirbhayam	Yes	Yes	Yes	**Yes**	Yes	**Yes**

V. CONCLUSION

In this paper, we have described our prototype application, rescuers take while trying to reach the victims. With the use of cloud database, access of user's location will be secured and invulnerable. With the full implementation of application, user can call for help in every emergency situation. Users will be able to notify his/her friends and family members about the

emergency with location tracking. Local authorities will be able to track record of bad activities and can reach the place before they take place. It will be way more easy to identify criminals with the recorded audio/video footage. In today's world, our application will be hope and bright light for humanity.

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