Use of Android Applications and Website to Combat Criminal Activities

Nazmul Kaonine [1], Shafee Chowdhury[2] and Farhan Mohd. Fokrul Alam [3]
[1,2,3]Department of Electrical and Computer Engineering
North South University, Baridhara R/A
Dhaka, Bangladesh
[1]nazmul.kaonine@northsouth.edu, [2]shafee.chw@gmail.com, [3]farhan.alam@northsouth.edu

Abstract— **Crimes can be of many forms. Numerous criminal activities are taking place all over the world right at this very moment. The measures that have been taken so far to prevent or battle these criminal activities have not been promising in many cases. The growing need to battle these emergencies is something to be accounted for. This paper describes a system that can suppress them using the help of ICT. The system consists of two mobile applications and a website. Together, they can be used to reduce the crime rates successfully. The system works in collaboration with law enforcement. The goal of this research is to aid people in emergency situations and keep them safe using available means.**

I. INTRODUCTION

Crimes are occurring on a daily basis worldwide. Criminal activities such as terrorism, drug trafficking, money laundering, robbery, contract killing, extortion, fraud, human trafficking, corruption, black marketeering, political violence, harassment, kidnapping, rape and abduction require much closer consideration. At the present times, almost everyone including members of the law enforcement has at least one smart phone. These two bits of information are the motivation behind this research.

This system discussed about in this paper consists of two mobile applications and a website that are dedicated for the betterment of the society. One application will be used by the general public whenever they face emergency situations for instant communication. The other application is to be used by the law enforcement to aid the civilians in need and the website can be used to monitor the whole process and to provide information.

II. REVIEW OF EXISTING SYSTEMS

There are a number of similar papers that suggest different ideas and approaches to use a mobile application or a website in order to aid the general people and eradicate crime but none of them comes with a great combo of features that can be used in an emergency situation accurately.

An application called California Crime Finder has been developed by The Placer Group to quickly look up criminal cases. It is primarily used by legal practitioners working actively in the field [1].

Spotcrime is a crime mapping website owned by ReportSee, Inc. that provides information on various crimes. The data is gathered from police departments and news reports, which can be accessible by anyone [2].

An application named VithU was introduced in India in 2016. The feature contained the click of the power button twice that would mean an emergency. The app automatically starts sending messages asking for help along with their location to the contacts that are saved beforehand [3].

There existing an application in Bangladesh called Report2RAB. This application is aimed to improve the communication between the general people and the police department. The only feature it has is the ability to report any crimes directly to RAB [4].

Another application introduced by the Bangladeshi Police Department is Hello CT. It aims at collecting information from the general people about suspicious activities regarding terrorism [5].

III. CONTRIBUTION TO THE SYSTEM

The existing technologies have either been less efficient for instant aid or for tracking the location of crime. The time that civilians have to wait to get help and the time required for the law enforcement to track the victim's exact location can prove to be crucial in many scenarios.

This is where our system fills the gap. Our applications increase the civilian to civilian and civilian to law enforcement communication. A civilian in need of aid can call other civilians or the law enforcement according to the seriousness of the crime with the help of two distinct buttons inside a mobile application. The application will instantly start searching for nearby civilians or request the most nearby law enforcer depending on the button pressed by the victim. The location of the victim shows up in a map on the receiving end(s). The receiver of the request, let it be the law enforcer or another civilian can then aid the situation.

IV. SYSTEM DESIGN

The system is divided into three parts. There are two mobile applications and a supporting website using secure verification systems.

A. *Android Mobile Application for civilians*

The Android mobile application for civilians has a number of features such as registration, a verification system and login system; a map; two separate toggle buttons; a hotline number; a trigger-able alarm, a dedicated camera and photo upload button; a review system.

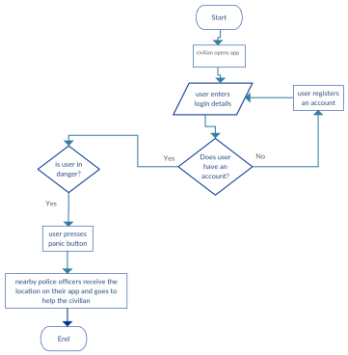

Fig. 1. Flowchart of the civilian app named "BACHAObd!"

B. *Android Mobile Application for law enforcement*

The Android mobile application for police is a light monitoring application that contains a map, a secure verification system and a notification feature.

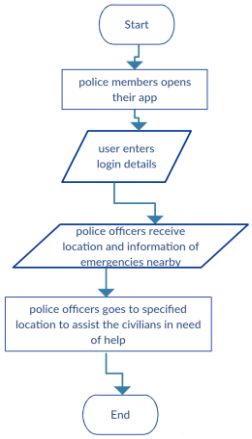

Fig. 2. Flowchart of the law enforcement app named

C. *Website*

The website is the primary monitoring medium of the entire system. It is connected to the database of both the applications and receives real time updates on notification, requests, accepted requests and location from the applications. Using it, an authorized police personnel can observe all the help requests that are being made, which user is going there to help a civilian and how the police respond to such requests.

V. DESCRIPTION OF ANDROID APPLICATIONS

A. *BACHAObd! – The android app for civilians*

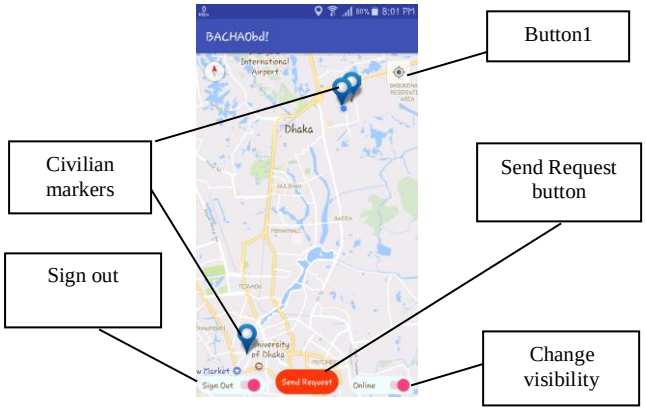

Fig. 3. The BACHAObd! Application Home Screen

The entire multi-level system consists of these components and features below:

Fig. 4. Loading screen of the application

1) *Loading screen*

The loading screen or splash screen in Fig.4of the civilian android application named "BACHAObd!" Considering the importance of the waiting time, this screen will only take a maximum of two seconds to load. It contains the BACHAObd! App logo. A screenshot of the loading screen is shown in Figure 2.

2) *Login*

The login screen is where users will be prompted to login with their email address and password. Clicking the login button will take them to another screen which will prompt them to verify themselves using their phone number. The app will automatically detect if the user is using the input phone number at that instant and take them to the map interface once it is verified from the database. If the number is not being used on that smartphone, the phone number will receive a SMS with a code. The user will have to manually input the

verification code to get access to the map interface. The login is a one-time process unless the app is reinstalled.

3)Registration page

The registration page prompts the user to fill in their information. This involves their full name, the email address, their phone number, their username of choice, and their password. If an input box is not filled, access will not be provided and there will be a corresponding error message.

4)Home Screen

The home screen in Fig.3 consists of a map that shows the users location initially. If the user navigates to some other area inside the map, the click of Button1 will navigate the users to their positions automatically. There is a sign out button which takes the user back to the login screen. This will require phone number verification again to get logged in.

There is a toggle button which changes the visibility of the user to other civilians using the same app. This basically means the user needs aid from nearby civilians. The other users shows as a blue marker on the app.

A click of the "Send Request" button shows the user a loading request that simultaneously send the most nearby law enforcer using the law enforcement app a notification. The notification informs the law enforcer that someone is in need of immediate help and prompts him/her to accept the request. If the request is accepted the user will get a notification and the user's marker will diminish from the map of other law civilians.

If the most nearby law enforcer does not accept the request within the first ten seconds, the request will be directed to the second-most nearby officer. The transfer of requests occurs every ten seconds thereby.

5) Navigation Bar

The navigation bar of the app contains the list of Emergency contact numbers of the country, News, information on police stations details and their location. Users can get access to this by swiping right on the phone screen.

6) Menu Bar

The menu bar contains a dropdown menu where users can select "Send SMS" which basically sends three SMS to his/her relatives phone number notifying them that the user in need of danger. It also contains a hotline number which is the country's emergency number.

The Menu Bar also contains a review system where the user can give feedback and rate the application.

7) Camera Button

The camera button allows the user to quickly capture the scene of the crime and save it to the phone's album which allows the user to report the crime later.

B. The monitoring app for law enforcement

This app has no login feature, but only a phone number verification system. Once verified from the database, it takes the law enforcer to the map screen.

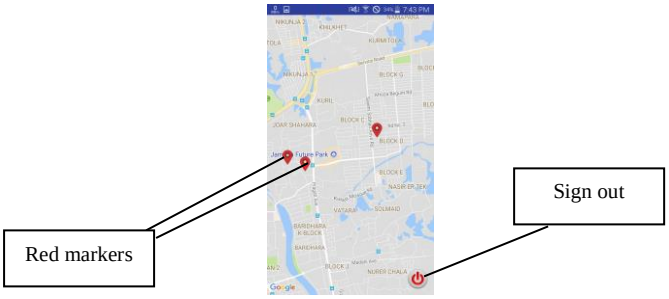

Fig. 5. The app for law enforcement

1) Home Screen of the law enforcer application

The Home screen in Fig.5 consists of a "Sign Out" button and a map showing the civilians in trouble who are using the "BACHAObd!" application.

2) Notification

As soon as a civilians sends requests to law enforcers for help, the law enforcers receive notifications on their applications about the victims' whereabouts. The officer can either accept the request if he/she is free or the request will be transferred to a second officer nearby officer within a few seconds.

3) Markers in map

The markers of the users first show red in color but once the request a civilian is accepted by the law enforcer the corresponding marker changes to a blue icon in the map of law enforcers.

VI. DESIGN OF WEBSITE

1) The Police Dashboard

The dashboard shows all the statics of the application usage. This includes the number of civilian users, police users, on duty police and their location and notifications of all the requests.

2) Police Registration Form

All the police offices are registered manually so that they are authorized by the police department. That way the moderator will be able to keep track of all the police officers and their team that are available for the service.

3) Location Database Page

This page of the dashboard contains all the saved locations from the requests of the civilians. It also stores the information of the other civilians who are nearby in case a civilian presses the panic button to call other civilians. That way the police can ensure maximum security to the civilians.

VII. Conclusion

The project is complete and is open to new features. It was designed and implemented in accordance with the time and security factors in mind. The civilians can be identified as their phone numbers can be extracted from the database. The future scopes of the system is to battle crime, emergency fire services, instant medical support and to hire private security agencies.

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