

Crime Mapping Through Digital Data Analysis From Intermediate Repository by Crowd Sourcing



I n s p i r i n g E x c e l l e n c e

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Declaration

This is to ensure that this final thesis report is put together by the authors with the end goal of getting the level of Bachelor of Science in Computer Science and Engineering. We therefore proclaim that every one of that cases of work that we have made utilization of have been appropriately certify with legitimate references.

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Abstract

Crowd-sourcing operationalizes swarm insight, and it is an instrument for utilizing the aggregate knowledge of online clients toward beneficial finishes. Crime map is an instrument that visualizes crime information based on the geographical location of the crimes. We will deploy a real time crime mapping system service in our country's context that will make a combination of crowd sourcing crime incidents from public and extract crime information from various social networking sites. Overall a compact, illustrative database containing data from crowds will focus on public issues designed for resolving problem. The goal is to establish a near real-time service via crowd-sourcing approach and discover a way to collect crime information in a timely fashion by which will make a contribution to crime of geographical research and in declining rate of crime. Data manipulation through user's participations will rise up the usability to quality full outcome.

Index Terms- Crowdsourcing, Mapping, social networking, data manipulation, geographical research.

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CHAPTER 1

Introduction

Nowadays, social media administrations, particularly social-websites, have turned into a vital piece of individuals' day by day life, where they can share incidents around them, for example, what they have seen and what occasions have happened around them, by posting content messages, geo-information, photos or even recordings on online networking. Therefore, there has been a developing enthusiasm for utilizing the Internet crowd sourcing to comprehend wrongdoings. Crime mapping is an instrument that envisions wrongdoing data taking into account the topographical area of the violations.[6] This mapping can assume a critical part in the policing and wrongdoing decrease process, from the major phase of information gathering through to the observing and assessment of any focused on response.

In earliest time, the police use a crime map to identify the inherent geographical component of crimes by sticking pins into maps displayed on walls, where each pin on the map represents a crime occurrence. As a result, the police officer used crime map for crime investigation, thus helping prevent, reduce and solve crime problems.[4] Newly, there has been a developing enthusiasm for building up a crime map which getting wrongdoing information by means of utilizing the techniques for group sourcing or the administration open information. Since the advancement of Global Positioning System (GPS) in smart gadgets, individuals can utilize an advanced cell to effortlessly share a geo-data contained mixed media messages like pictures, audios and videos. In this research paper, we acquainted the crowd-sourcing approach with get crime information to take care of those matters, in which every one of the focuses are motivated to report misconduct occurrences definitely. Also, the framework checking data stream to give a more decision of information sources. To the best of our insight, there is no comparable framework that has been sent in the field in Bangladesh some time recently. Finally, it can be said that the system will provide the necessary and reliable information on particular area. It is a crime database by collecting crime data from surroundings which will be very helpful for people to move around the city freely by using real time services.[8]

1.1 Motivation

Our main motivation throughout the whole project was a will to help people providing a system that can keep them away from crime occurrences. People's life and property both held greater value in a society. Society's as well country's development cannot increase until we cannot safe those from destruction. As today's world is fully based on technology, by incorporating modern technology it is not that tough to build a system through which people can get support for their safety.[12] As we wanted to provide this support as cheap as possible and to reach as much people as possible, we concentrated on developing Android app which can be hugely available through smart phones and consists lots of opportunities to design an active system. As people go through every simplify system our utmost try was to build a simple and easy to use system that can be acceptable hugely from masses.

1.2 Thesis Outline

Chapter 1. Introduction

Newly, there has been a developing enthusiasm for building up a crime map which getting wrongdoing information by means of utilizing the techniques for group sourcing or the administration open information. In this research paper, we acquainted the crowd-sourcing approach through get crime information to take care of those matters, in which every one of the focuses are motivated to report misconduct occurrences definitely. Finally, it can be said that the system will provide the necessary and reliable information on particular area.

Chapter 2. Background study

Mostly people do not care about how they can be secured from unexpected occurrences. Just not the people who are coming outside from the area but also who are living inside the area they have to know what and how crime occurrences are going through their area. People activities and movements should be noticed more carefully so that we can demolish other's evil motives. It is not very easy to indicate who have well or who have bad intentions.

Chapter 3. System Design

After the information investigation, the map will demonstrate most elevated crime zone highlighting distinctive hues as per crime inclined sorts. An organized full refined framework StaySafe that will assemble advanced information from its enlisted clients and investigating those records for mapping wrongdoing is our principle and broadly useful. Showing the feed containing posts will come through analyzing data from repository.

Chapter 4. System implementation

Project is secured by administrative members in the various activities such as record updating of video, audio & image files, report verification & maintenance etc. All the crime information will be shown as a shading spot on the computerized outline, to its area and characterization. Unquestionably, the clients can utilize the zoom in or zoom out operation on the guide, to see the general circumstance or the detail depiction of a crime in a position of their advantage.

Chapter 5. Result and evaluation

For some days we simply examined the wrongdoing reports originating from that range of various circumstances. For knowing the fruitful usage of the pie diagram indicating particular territory's chance events as per 24 hours' time traverse, we chose a particular region (Uttara) to watch the entirety. Subsequent to examining those we effectively show zones as per their crime occurrences rate. We figured out how to have group of information for our testing from various zones with various assessments.

Chapter 6. Discussion

Individuals will see the diagram demonstrating crime level as indicated by regions with eras, so when a range need more focus that will be distinguished. Posts of crime occurrence will give individuals to move around outside and to be sheltered. This project is a proper reflection of democracy where people's voice will get a scope to shout out against odds. Every type of crime will be highlighted from mass people so it will be more emphasized to take proper action.

Chapter 7. Limitation

For analyzing data in a huge manner, we could not get such reliable structured data. If we can have the open government data, for different source our system will more likely and beneficial. Similarly, from daily news source (online bdnews24.com,) we may get some information on crime so that the system will be more informative for the users.

Chapter 8. Future Work

In future, our project can be extended by adding various features to make the system more efficient and useful for the general people. There will be an adding feature to send crime alert to the registered users through app wherever there occurs any crime. Tracing transportation system of any specific crime porn area. Moreover, sending an email to the nearby police station immediately when crime occurs.

Chapter 9. Conclusion

Crime mapping can play an important role in the policing and crime reduction process, from the first stage of data collection through to the monitoring and evaluation of any targeted responses with the progress of Geographic Information System (GIS) and Internet. The accuracy and efficiency of our project will not only help social life to more relax able but also economic perspectives which are hindered due to criminal actions can also be banefully achieved.

CHAPTER 2

Background Study

In earliest time there was not enough scope from which we can encrypt google map for analyzing. Till now getting crime related data is so much manual that recording those image structured database is highly recommended for its data availability and usage ability. As of late, there has been a developing enthusiasm for building up a crime mapping which acquiring crime information by means of utilizing the techniques for group sourcing or the administration open information [15]. There are various locales, for example, CrimeReports6, Crime Mapping.com7 and SpotCrime8, which are situated in other countries; and StaySafe are mapping the crime information, upload by users, to an advanced digital map, and afterward analyzing crime occurrence patters, so that and people can utilize these maps to acquire a comprehension of neighborhood crime or even to get ready notification when a wrongdoing happens in the place in which he or she is intrigued [7].

2.1 Problems faced in Bangladesh

Being citizen of a third world country it is our day to day struggle fighting against crimes. Each and every day many of us somehow face any crime. Different types of crimes occur in different areas at different times. Crime and people who are involved with this crime do not spare a single careless moment of our unconsciousness to execute their evil deeds. Actually we ourselves are responsible enough not being more careful and having not much security concern for which we get troubled.

2.1.1 Safety issue

People who get out of home for different works are in more need of security for safely reaching at home. Mostly people do not care about how they can be secured from unexpected occurrences. But it is very much important to keep security measures for the wellbeing of ourselves. Our life and property both can be damaged just for not having minimum secured mind set up.

2.1.2 Area based security concern

In which area what kind of crime incidents occur most it is actually known by no one. But it is very much needed to know for safe movement. Just not the people who are coming outside from the area but also who are living inside the area they have to know what and how crime occurrences are going through their area. Otherwise people cannot take necessary steps to prevent those, cannot make the place safe and secure.

2.1.3 Time to time security concern

Time is an important concern when we are talking about crime of any specific area. Most we do not know where and which time what type of crime is occurring. A place can be safe at morning while the same place is not safe at afternoon. The frequent incidents give a common perception of the time of crime happening. By knowing that we can make our movement more safe taking safety measures with us preventing those.

2.1.4 Life and property conservation problem

Crime just not only damages our life but also damages our property. In today's life it is so common that incidents of happening conscious property damage of people by their enemy. For getting benefits or making money damaging or destroying people's property is also common. More over goons, hijackers can easily get people killed as our measures of keeping ourselves are not sufficient enough.

2.1.5 Unawareness of crime and terror activities

It is not very easy to indicate who have well or who have bad intentions. Some people can plan and execute terror attack in front of ourselves without giving us any hints of their motives. People activities and movements should be noticed more carefully so that we can demolish other's evil motives. If these doubtful characteristics of people and incidents come in front of masses then actually some measures can be taken to emphasize our security shield.

2.1.6 Unconsciousness of crime characteristics

Crime types can be undoubtedly infinity and those who are involved with these can proceed their plan in uncountable ways. But whatever and however it is, we all should come to know or indicate these crimes so that we can prevent those. If people and authority are not well known enough what is going on around them then the situation cannot be get better enough.

2.2 Literature Review

We needed to experience some comparable activities we found in the web which without a doubt help us to think more unrefined level. We had to practice some research papers and tried to assemble as much as data possible from the resources we found. Each study had unique system which made it much all the more trying for us of how to continue with our work.

Some connected works are as followings.

- Liu Y, Alexandra T, Nakajima T. Using stranger as sensors: temporal and geo-sensitive Question answering via social media[C]//Proceedings of the 22nd international conference on World Wide Web. International World Wide Web Conferences Steering Committee, 2013: 803-814.

In this research paper, they present MoboQ, a transitory and geo-touchy inquiry observing framework, can take care of the issues which are hard to catch by sensors, for example, whether a cafeteria is grouped, whether a bank has a long holding up line. MoboQ users' ask questions to the system and the return answer will be sent to the questioner.

- Stevens M, D.Hondt E. Crowdsourcing of pollution data using smartphones[C]//Workshop on Ubiquitous Crowdsourcing. 2010.

In this paper, they described an exploration that makes utilization of mobile-sourcing way to deal with measuring and mapping urban disorder adulteration, to manufacture an aggregate demand map. The paper carried a cell telephone application which gathers the appeal data with restricted data from the clients.

- Shah S, Bao F, Lu C T, et al. Crowdsafe: crowd sourcing of crime incidents and safe routing On mobile devices[C]//Proceedings of the 19th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems. ACM, 2011: 521-524.

In this research, they create a cell phone application that group sourcing wrongdoing episodes and find out a safe steering between two focuses in the guide for clients by breaking down and ascertaining the got wrongdoing information. The service is different from ours because it is only extracted from its mobile user, while our system provides both data from crowdsourcing of mobile devices and extracting of real-time social network services.

2.2.1 Crowdsourcing

Crowdsourcing is a way of solving problems and producing things by connecting online with people that we otherwise wouldn't know. Crowdsourcing is a particular sourcing model in which people or associations utilize commitments from Internet clients to get required administrations or thoughts. Crowdsourcing was authored in 2005 as a portmanteau of Crowdsourcing [1, 2]. This method of sourcing to gap work between members to accomplish a combined outcome was at that point fruitful before the advanced age [4]. Crowdsourcing is recognized from outsourcing in that the work can originate from an ambiguous open (rather than being dispatched from a particular, named gather) and in that crowdsourcing incorporates a blend of base up and best down

procedures. Focal points of utilizing crowdsourcing may incorporate enhanced costs, speed, quality, adaptability, versatility, or differing qualities.

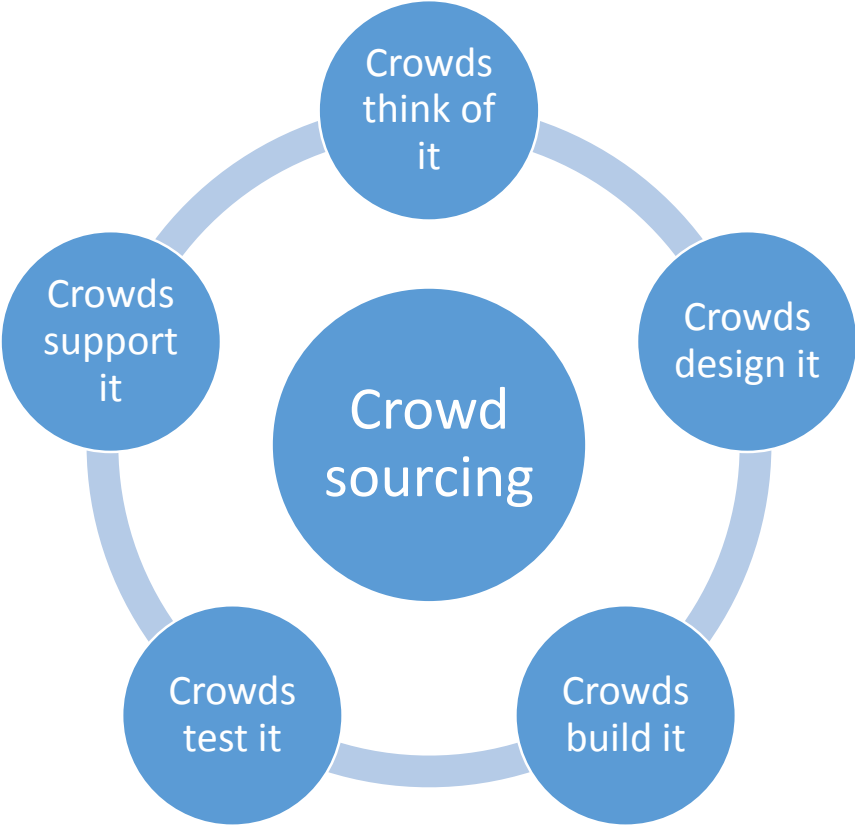


Figure 1: Crowdsourcing view

Crowdsourcing as thought rivalries or advancement challenges gives an approach to associations to realize past what their "base of minds" of representatives gives[5,7] Crowdsourcing can likewise include rather monotonous "micro tasks" that are performed in parallel by huge, paid group. Crowdsourcing has likewise been utilized for noncommercial work and to create normal merchandise [6]. Apparently the best-referred to case of crowdsourcing starting 2015 is crowdfunding, the gathering of assets from the group.

2.2.2 Crowdsourcing in Social Network Services

An informal communication benefit (additionally long range informal communication webpage, SNS or web-based social networking) is an online stage that is utilized by individuals to manufacture interpersonal organizations or social relations with other individuals who have comparative individual or vocation interests, exercises, foundations or genuine associations. The assortment of remain solitary and inherent long range informal communication benefits right now accessible in the online space presents difficulties of definition; in any case, there are some regular features:[1]person to person communication administrations are Web 2.0 web based applications,[1][2]client produced content (UGC) is the backbone of SNS organisms,[1,2] clients make benefit particular profiles for the webpage or application that are outlined and kept up by the SNS organization,[1][3] and interpersonal interaction administrations encourage the improvement of online informal organizations by interfacing a client's profile with those of different people as well as groups[1][3]. Most informal organization administrations are electronic and give intends to clients to connect over the Internet, for example, by email and texting and online gatherings.

Crowdsourcing is the act of getting required administrations, thoughts, or substance by requesting commitments from a substantial gathering of individuals. Previously, that occasionally implied a long, laborious process, frustrated by the correspondence moves one would hope to experience at once before the web. Truth be told, very little consideration was given to crowdsourcing before it was received by web-sagacious associations that were intended to exploit the arranged world. This is the essential reason the term crowdsourcing was instituted just a couple of years prior, notwithstanding the idea's presence for a long while now.

2.2.3 Mobile Crowdsourcing

Generally, crowdsourcing is characterized as the act of acquiring required administrations or substance by requesting commitments from a substantial gathering of individuals, and particularly from an online group. As of late, with the quick advancement of versatile Internet and portable long range interpersonal communication techniques, the extent of group critical thinking structures utilizing mobile phones has been expanded and the conventional Internet Crowdsourcing is developing into another worldview, i.e., Mobile Crowdsourcing (MCS), which encourages the expanding number of cell phone Clients to take an interest crowdsourcing tasks. On one hand, compared with Internet crowdsourcing, versatile crowdsourcing influences both tactile information from cell phones (disconnected group) and user contributed information from portable interpersonal interaction administrations (online group)[7].

Then again, portable crowdsourcing develops the first client support plan of crowdsourcing activities, from express investment to verifiable participation [5]. As a result, quite various Crowdsourcing assignments that are hard to finish in light of Internet crowdsourcing has now turned out to be practical, e.g. Monitoring contamination level or commotion level at the city-scale, foreseeing the landing time of transports, gathering reality happenings after a fiasco, and so on.

2.2.4 Crowdsourcing Crime Incidents

Certain types of crime are reported to the police because of insurance. Police may feel that dominant problems in a neighborhood are car crime and burglary. Sexual assault, domestic violence and cyber-crime is also introduced as crime incidents. Only 15% of sexual assault victims report to the police where of report crimes, the conviction rate was around 30%. In addition, stalking can be hard to quantifying. There is also negative consequence for victims if they report these crimes, not only from their attackers, but psychologically, morally and socially. It is hard to quantify and act on these sorts of crime, given normal police reporting mechanisms which are geared around the notion of crime as event (digital), not a process (analogue).

CHAPTER 3

System Design

After the data examination, the guide will exhibit most lifted wrongdoing zone highlighting particular tones according to wrongdoing slanted sorts. A sorted out full refined structure StaySafe that will collect propelled data from its enrolled customers and researching those records for mapping wrongdoing is our standard and comprehensively helpful. A calculation will investigation the put away data for mapping wrongdoing and foundation of time-based graph. Our own arranged model will give game plans concerning existing wrongdoing issues of the overall population. The assembled data will be our component for examination[3]. An overall population's one of the best stress ever is to decide the wrongdoing events to secure its family. Demonstrating the containing posts will come through breaking down information from archive with sustainable manner. Client can transfer pictures of constant wrongdoing episodes, sound recordings and recordings to share their encounters to others.

3.1 System Overview

The proposed model is named StaySafe. We need to measure crime issues which prevents our everyday life. A general public's one of the greatest worry ever is to determine the wrongdoing occurrences to secure its kin[5]. Our own planned model will give arrangements with respect to existing wrongdoing issues of the general public. An organized full refined framework StaySafe that will assemble advanced information from its enlisted clients and investigating those records for mapping wrongdoing is our principle and broadly useful.

User's Perspective	Administrator's perspective
User can login by using Gmail id or Facebook id.	Admin can login to see the database and the information.
User can post or upload audio, video & image files in the app.	Admin can see the information that user posted.
There will be comment box also.	Admin can all the posts and also can verify the information.
User can select the location of inside Dhaka city.	Admin can see notifications, update or delete user details or information.

Table 1: Different Perspective Table

3.1.1 Raw digital data collection infrastructure:

The proposed model is a stage, where individuals will meet the crime incidents of day by day events. The gathered information will be our element for examination. Client can login into the application through Facebook and Gmail accounts. Just enlisted client can see the posts in User Interface.

3.1.2 Intermediate repository for data analysis:

User can rate a specific crime according to their perspective. The ratings of the crime will be the apparatuses for our data analysis[8]. An algorithm will analysis the stored information for mapping crime and establishment of time-based chart. Showing the feed containing posts will come through analyzing data from repository.

3.1.3 Structured user interface:

There will be a User Interface to share and view the crime episodes around various ranges. User can upload pictures of real time crime incidents, audio recordings and videos to share their experiences to others. User can select different area names and rate the crime (i.e. extreme, moderate and mild). Just enrolled client can see the posts in User Interface.

3.1.4 Color-coded highlighting map:

After the information investigation, the map will demonstrate most elevated crime zone highlighting distinctive hues as per crime inclined sorts. Distinctive hues will determine the thickness of wrongdoing in various zones [9]. Extreme zone will indicate the highest crime ratings and so moderate will define the medium crime rate, lastly, mild will designate the lowest crime rate in specific area. For example, the Red shading will demonstrate the extraordinary crime zone, the yellow will show the moderate and the green will demonstrate the mild crime zone in the map.

3.1.5 Timing based color-decoding chart:

For determining the crime parts of an individual region, we have executed a pie graph to demonstrate the crime rating proportions from high to low [10]. The time zone is partitioned into four criteria. For example, morning, evening, night, mid-night. The graph will characterize the rates as per the posts depth of particular regions. The diagram will give which time of 24 hour time-traverse is protected to visit that specific zone.

3.2 System Architecture

StaySafe is a crowdsourcing crime map framework that made out of a server running in the cloud and customer application that incorporate a site and an android application to exhibit the intelligent misconduct substance to the clients.

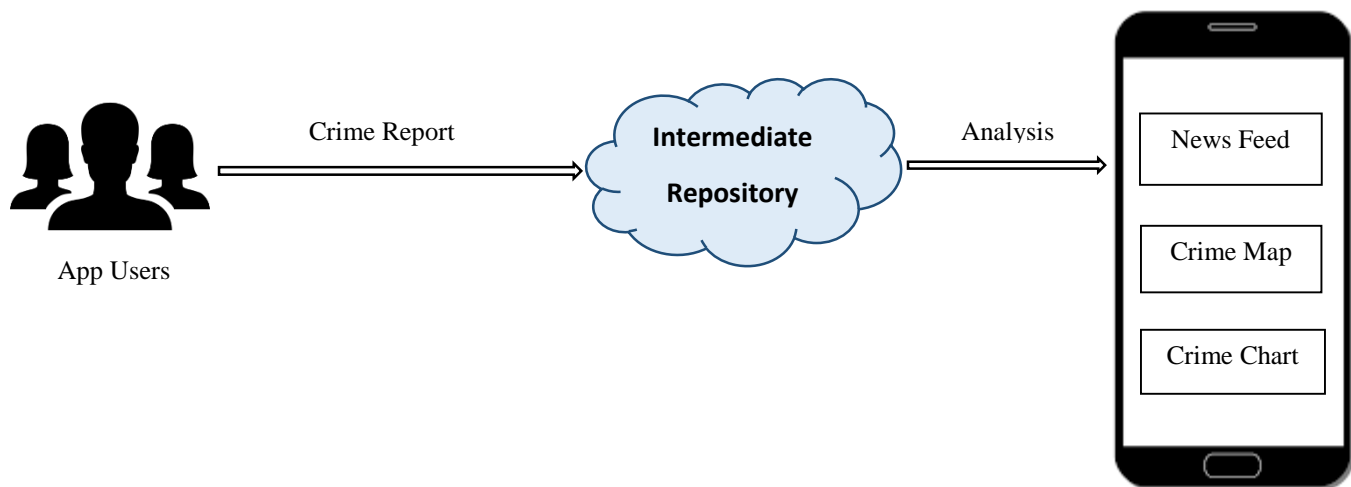


Figure 2: System Architecture

A secured life and a quiet society with least bother is a typical dream of each individuals of a nation. Individuals has the privilege to know which place is secure for them to move around. Our proposed model is the best approach to tell individuals about the sheltered spots to move around alongside the day and the outrageous wrongdoing zone [6] . Through the framework, individuals will get to be mindful of various wrongdoing episodes and the degrees of the wrongdoing sorts.

3.3 System Requirements

For the fluency of our system, some functional and non-functional requirements must be met. To acquire the functional requirements first of all we need user's login through Gmail account or Facebook account. For Digital data input, users have to go through upload file feature. To view the posts of other users, users need to select the feed. For viewing area based crime rate, map view option will be available in the application design. Users have to select map for viewing area based crime rate and to get to know time based crime chart of any specific area they have to choose that specific area on the app.

Our main concern is providing security of information given by the users. User access and encryption of data should work parallel and smoothly for better consequence. To meet performance requirements we give more importance on response time of our system. Users will

be provided with the most latest and accurate analysis of data in response of their given data. We tried to create a proper system environment so that any sort of error or occurrence are as minimal as possible [13]. To make our system widely usable we worked to have a user friendly interface where users can interact with the system simply and easily. For making the data more actively usable proper and structured documentation is necessary which we tried to provide [16]. As we worked on raw PHP template so we went through the simplified programming language to support our system. Android version of the app has met the technical requirements of the system perfectly. Overall, we made a full of open source crowd map system through crowd sourcing.

3.4 Work Flow

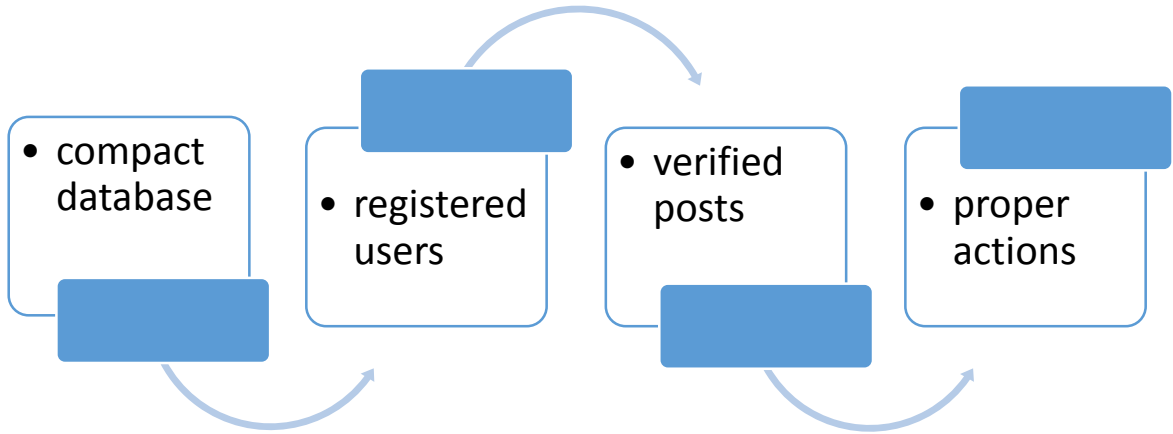


Figure 3: Flow of system requirements

CHAPTER 4

System Implementation

Venture is secured by managerial individuals in the different exercises, for example, record upgrading of video, sound and picture documents, report confirmation and support and so on. All the wrongdoing data will be appeared as a shading spot on the modernized framework, to its territory and portrayal. A cluster of information assembled by clients in a typical stage to make individuals thought about progressing wrongdoing exercises. There will be an information accumulation application which will take information from client for investigation and the examination will be advantageous for our general public. Obviously, the customers can use the zoom in or zoom out operation on the guide, to see the general situation or the detail portrayal of a wrongdoing in a place of their leverage [14]. Also, the customers moreover can utilize report scenes channel to see the predefined sorts of wrongdoing. We utilized a MySQL database to store the data [11]. The pie outline is working as indicated by four time-traverse (i.e. morning, evening, night, mid-night). This pie graph demonstrates which time zone is protected to move demonstrating the rates of particular territory.

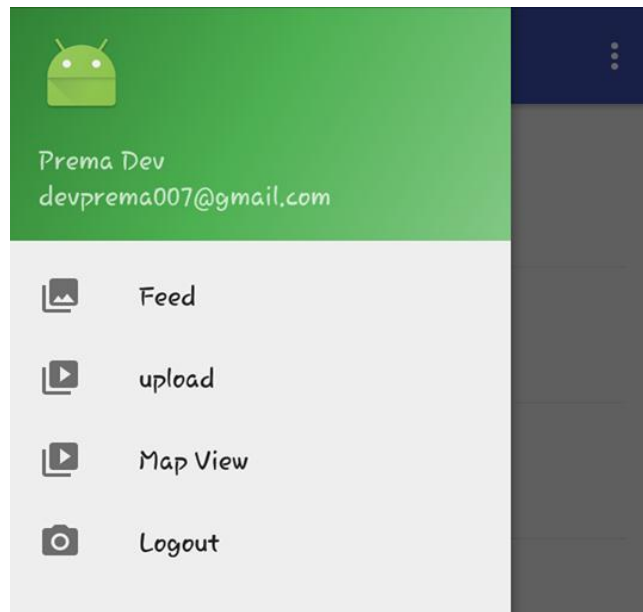


Figure 4: System Preview

4.1 Application Structure

There will be a data collection app which will take data from user for analysis and the analysis will be beneficial for our society. User login can be possible through Gmail account and Facebook account. User will put rating according to the priority of crime incidents. Posts can be pictures, audio, videos. There will be a map view option to view the map of whole area. Then selecting an area user will be able to view the chart of individual areas according to time span of a whole day.

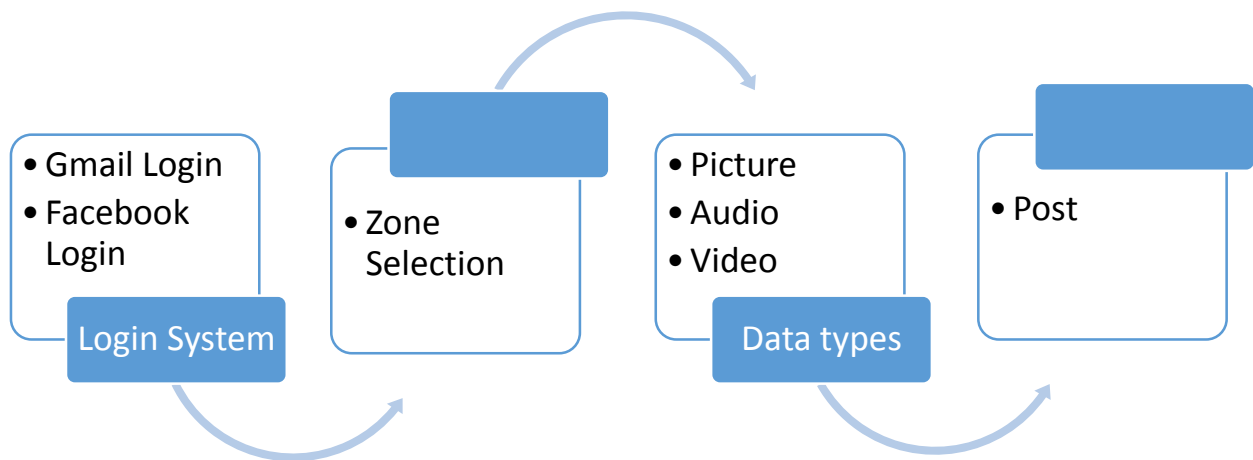


Figure 5: Structure of the application

4.2 User Groups

We focused to build our system for the usability of masses. People from all aspects are our target users who can use the system and provide data to the system for ensuring individual and social safety. Though men and women have equal scope to get security measures from the system but it cannot be denied that women will be more benefited by using the app. Women safety is always a bigger issue in every society. Women can make their movement safer if they use the app for becoming conscious and aware about crime and consider its suggestions practically. For now the system is available just only for Dhaka city but this proto-type's success will open the scope of

making it widely available throughout the whole country. It will create the system usable for all from everywhere which can deal with safety issue in a wide range of place.

4.3 Data Extractor

A bunch of data gathered by users in a common platform to make people known about ongoing crime activities. Project is secured by administrative members in the various activities such as record updating of video, audio & image files, report verification & maintenance etc. We used a MySQL database to store the information. In figure 2, it is shown that we have designed an upload interface that will be take input from users and gather the data for analysis.

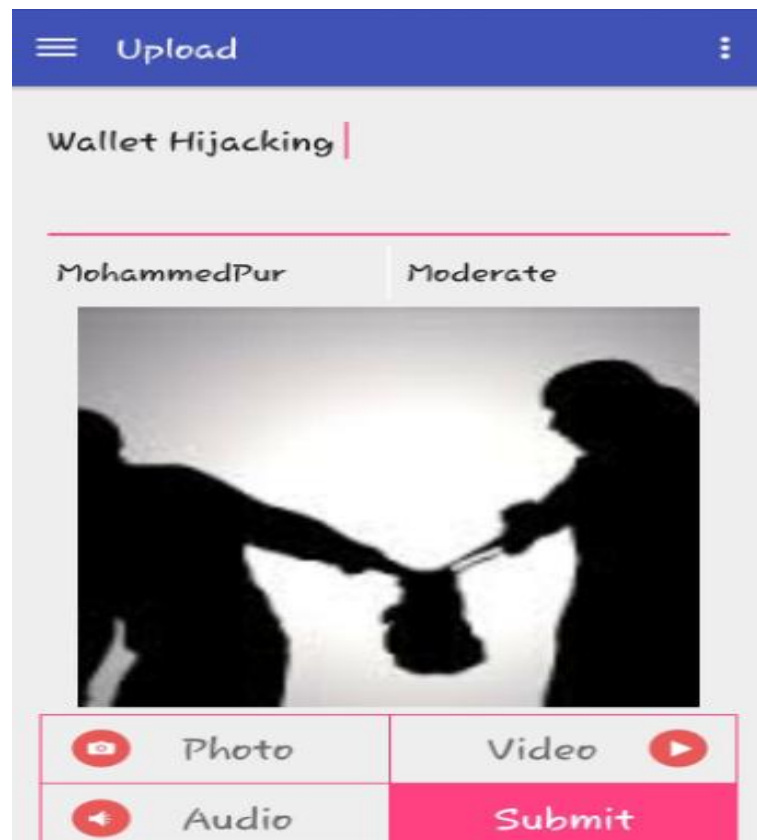


Figure 6: Upload feature of StaySafe

4.4 Data Visualizer

GUI (Graphical User Interface) is the data visualizer of our crime mapping. Digital data gathered from the users will appear in the news feed. Register users will be able to have the view of this news feed. The result of the gathered data through analysis will be displayed as the crime map and crime chart in the app. All the crime information will be shown as a shading spot on the computerized outline, to its area and characterization. At the point when there are multi-occurrences occurred in a district, the quantity of criminal episodes will appear on the spot on the guide [18]. Unquestionably, the clients can utilize the zoom in or zoom out operation on the guide, to see the general circumstance or the detail depiction of a crime in a position of their advantage. Besides, the clients additionally can use report episodes channel to see the predefined sorts of crime [12]. In figure 3 after analysis the data, the map will show the crime affected area to the user to ensure their safety visit.

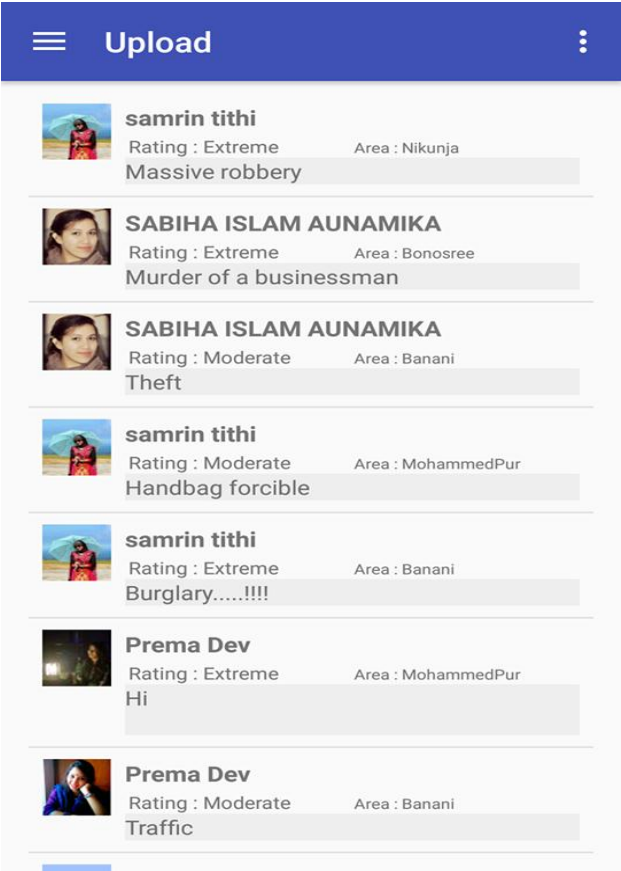
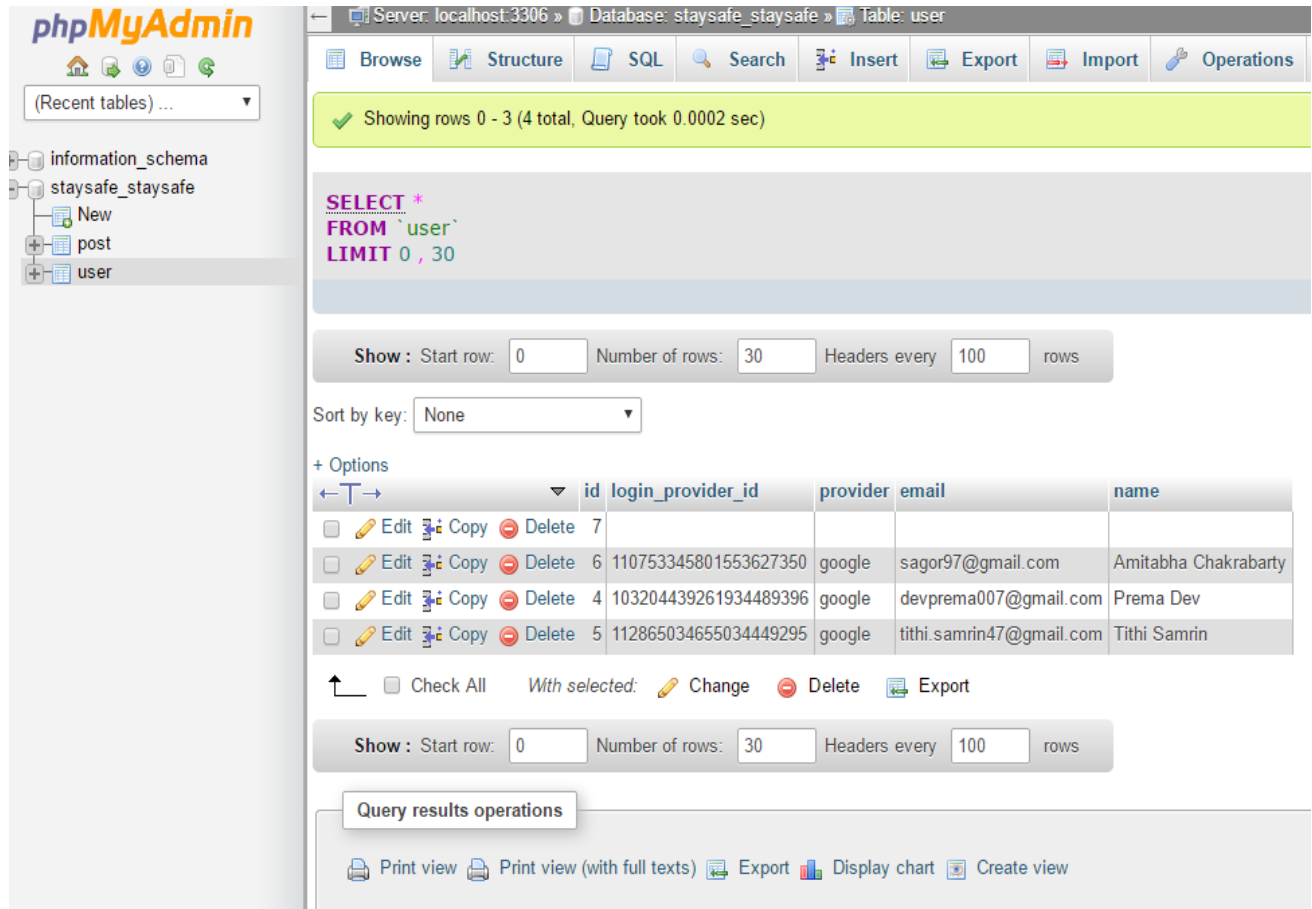


Figure 7: Feed Preview

4.5 Database:



The screenshot shows the phpMyAdmin interface for a MySQL database named 'staysafe_staysafe'. The 'user' table is selected, and a query has been executed: `SELECT * FROM `user` LIMIT 0, 30`. The results show 4 rows of user data.

	id	login_provider_id	provider	email	name
<input type="checkbox"/> Edit Copy Delete	7				
<input type="checkbox"/> Edit Copy Delete	6	110753345801553627350	google	sagor97@gmail.com	Amitabha Chakrabarty
<input type="checkbox"/> Edit Copy Delete	4	103204439261934489396	google	devprema007@gmail.com	Prema Dev
<input type="checkbox"/> Edit Copy Delete	5	112865034655034449295	google	tithi.samrin47@gmail.com	Tithi Samrin

Figure 8: User Login

phpMyAdmin

Server: localhost:3306 » Database: staysafe_staysafe » Table: post

Showing rows 0 - 11 (12 total, Query took 0.0002 sec)

```
SELECT *
FROM `post`
LIMIT 0 , 30
```

Show : Start row: 0 Number of rows: 30 Headers every 100 rows

Sort by key: None

+ Options

			id	user_id	description	file	file_type	area	rating	
<input type="checkbox"/>	Edit	Copy	Delete	14	1	Abd	66s1e.jpg	image	Gulshan	1
<input type="checkbox"/>	Edit	Copy	Delete	2	1	Hi boss....	cdjxc.mp4	vedio	Tongi	1
<input type="checkbox"/>	Edit	Copy	Delete	3	1	Hi boss....	16r94.mp3	audio	Tongi	1
<input type="checkbox"/>	Edit	Copy	Delete	13	1	Ctg	t2wr4.jpg	image	Badda	1
<input type="checkbox"/>	Edit	Copy	Delete	5	1	Crime	jltwk.mp4	vedio	Gulshan	2
<input type="checkbox"/>	Edit	Copy	Delete	6	1	etz	788fc.jpeg	image	MohammedPur	2
<input type="checkbox"/>	Edit	Copy	Delete	7	1	Test audio	yhkoo.mp3	audio	MohammedPur	2
<input type="checkbox"/>	Edit	Copy	Delete	8	1	Audio	oxyh0.mp3	audio	Gulshan	2
<input type="checkbox"/>	Edit	Copy	Delete	9	1	tttgfhjdjfststxjzjtskydkgdgidddyid	kf4ag.jpg	image	Banani	1
<input type="checkbox"/>	Edit	Copy	Delete	10	1	utdutsurdjtxjgx	sjzqj.mp3	audio	Tongi	1
<input type="checkbox"/>	Edit	Copy	Delete	11	1	utdutsurdjtxjgx	9w50n.mp3	audio	Tongi	1
<input type="checkbox"/>	Edit	Copy	Delete	12	1	dudtuditckcxgjxjfx	fxcho.mp4	vedio	Tongi	1

Check All With selected: Change Delete Export

Show : Start row: 0 Number of rows: 30 Headers every 100 rows

Query results operations

Print view Print view (with full texts) Export Display chart Create view

Figure 9: Data Input

File Manager

Search All Your Files for Go Settings

File Folder Copy Move Upload Download Delete Restore Rename Edit Code Editor HTML Editor Permissions View Extract Compress

public_html/api/upload/image Go Home Up One Level Back Forward Reload Select All Unselect All View Trash Empty Trash

Collapse All

- (/home/staysafeproject)
 - etc
 - logs
 - mail
 - public_ftp
 - public_html
 - api
 - config
 - upload
 - audio
 - image**
 - vedio
 - cg-bin
 - tmp

Name	Size	Last Modified	Type	Permissions
5wmd2.jpg	1.75 MB	Aug 3, 2016 1:07 AM	image/x-generic	0
66s1e.jpg	56.95 KB	Aug 4, 2016 9:41 PM	image/x-generic	0
788fc.jpeg	299.77 KB	Aug 3, 2016 2:15 AM	image/x-generic	0
kf4ag.jpg	905.34 KB	Aug 3, 2016 12:51 PM	image/x-generic	0
t2wr4.jpg	2.7 MB	Aug 3, 2016 11:20 PM	image/x-generic	0
wk6k2.jpg	3.4 MB	Aug 3, 2016 1:57 AM	image/x-generic	0

Figure 10: Sample image input

4.6 Pie Chart

The pie chart is working according to four time-span (i.e. morning, afternoon, night, mid-night). This pie chart indicates which time zone is safe to move showing the percentages of specific area. Here, in figure 4, we found the pie chart according to areas which will guide the people to move around.



Figure 11: Time-based pie chart.

4.7 Map Highlighting

Geo-coding, after encrypting Google map, we have modeled Dhaka city into eight zone for highlighting crime occurrences. An algorithm is working behind showing the areas crime density according to crime nature [4]. Basically an area is how much crime prone that will be indicated through the color of the map.

The data we have gathered from users that will be the main component of our analysis of the system. A database will store all the data on different crime incidents in particular areas. In figure 3 we can be seen that there is a map, where the area Banani is red marked and Tongi is marked as green zone. Similarly, other areas are highlighted according to the analysis of the user post on crime incidents.

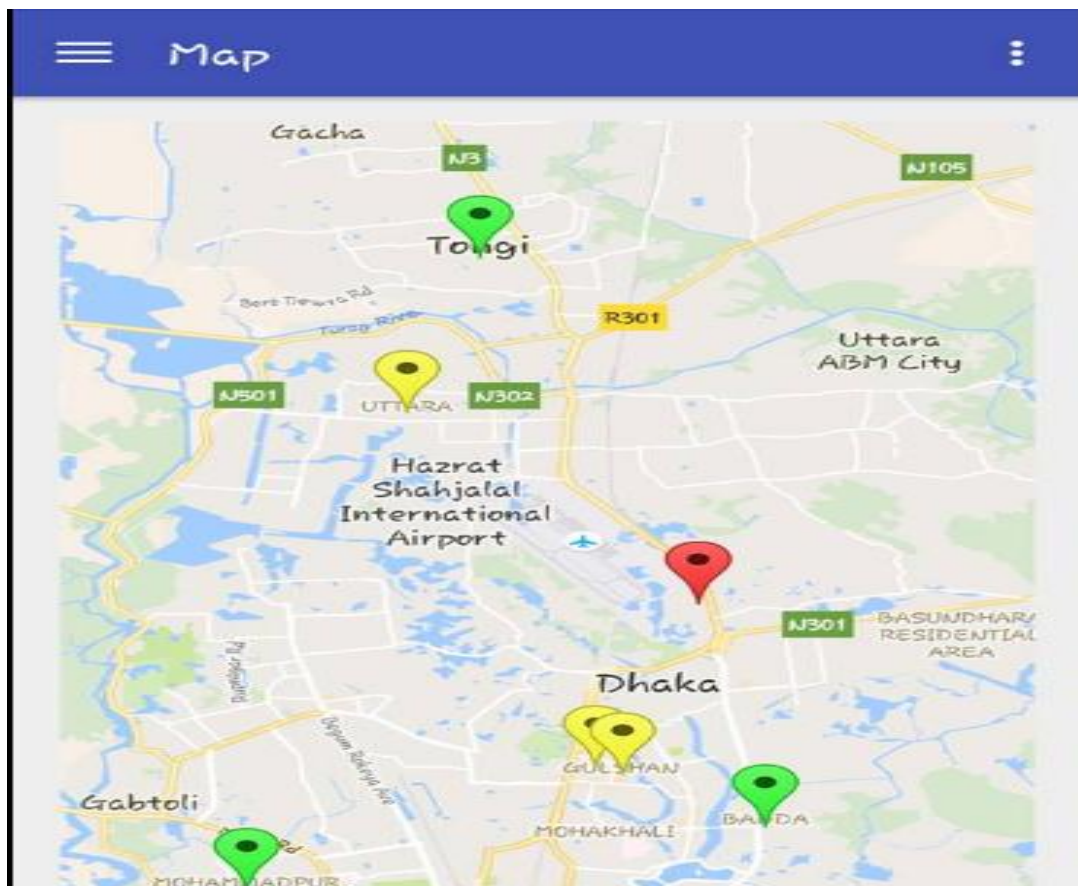


Figure 12: Color-coded Highlighting Map

4.8 System Flow

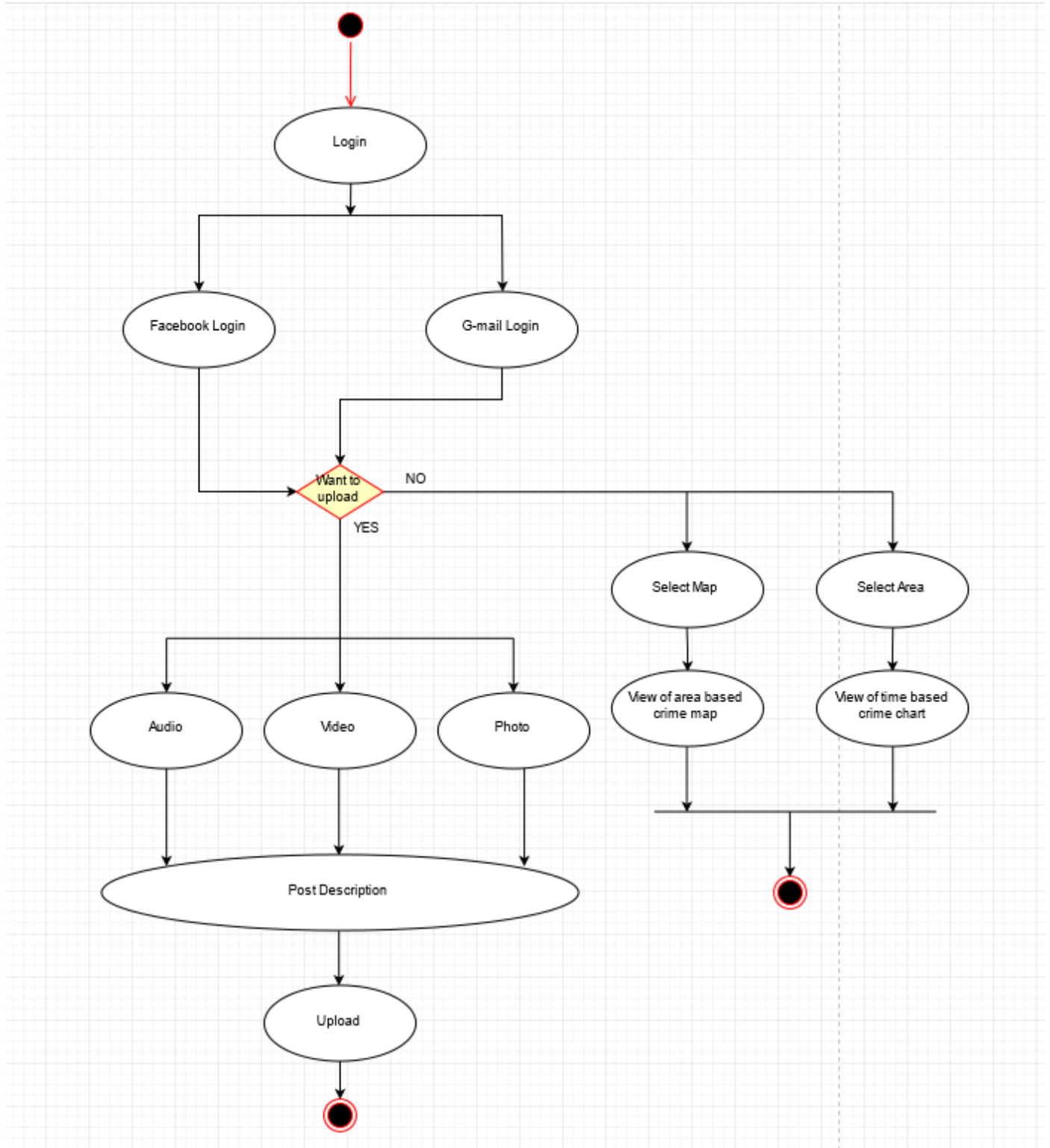


Figure 13: System Flow Diagram

CHAPTER 5

Evaluation and Result

For some days we basically inspected the wrongdoing reports beginning from that scope of different conditions. For knowing the productive utilization of the pie chart showing specific domain's shot occasions according to 24 hours' opportunity cross, we picked a specific locale (Uttara) to watch the total. Ensuing to inspecting those we successfully demonstrate zones according to their wrongdoing events rate. We made sense of how to have gathering of data for our testing from different zones with different evaluations. The result came unequivocally showing the most ideal rate of wrongdoing events of that range in light of time.

5.1 Data Result

5.1.1 Algorithm Analysis: (Area Mapping)

For explaining how our data is used to analysis we have taken here Uttara a specific zone from where authentic users are providing digital data at our intermediate repository. Following chart shows-

5.1.2 Data from Uttara Area:

Mild	Moderate	Extreme
1	2	3
1	2	3
1		3
		3
		3
		3
Total: 3	Total: 2	Total: 6

Table 2: Data Entry

$$\text{Total Post} = 3+2+6$$

$$=11$$

$$\text{Total rating points for all posts} = 3+4+18$$

$$= 25$$

$$\text{Analysis} = 25/11$$

$$= 2.272 \text{ (Moderate)}$$

We will consider the analysis greater than 2.5 as an extreme situation, having 2.272 Uttara zone will be highlighted with yellow pointer showing as a moderate crime prone zone.

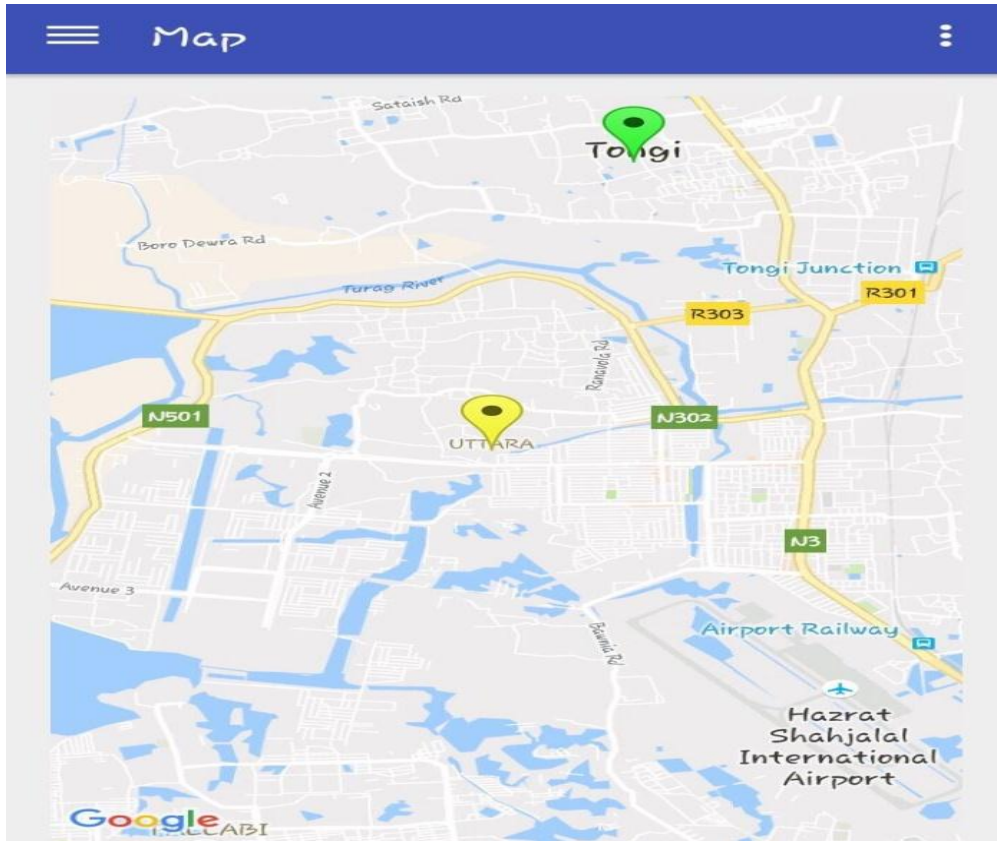


Figure 14: Area mapping graph

5.1.3 Data Analysis: Now for explaining Uttara area's crime percentage at different time span, we are calculating following collected data given by users of different time in Uttara.

Numbers	Timing	Rating
1.	Morning	1(Mild)
2.	Midnight	3(Extreme)
3.	Midnight	3(Extreme)
4.	Midnight	1(Mild)
5.	Afternoon	2(Moderate)
6.	Afternoon	3(Extreme)
7.	Afternoon	2(Moderate)
8.	Midnight	1(Mild)
9.	Afternoon	3(Extreme)
10.	Afternoon	3(Extreme)
11.	Afternoon	3(Extreme)

Table 3: Data Analysis Table

5.1.4 Graph Algorithm Based on Timing:

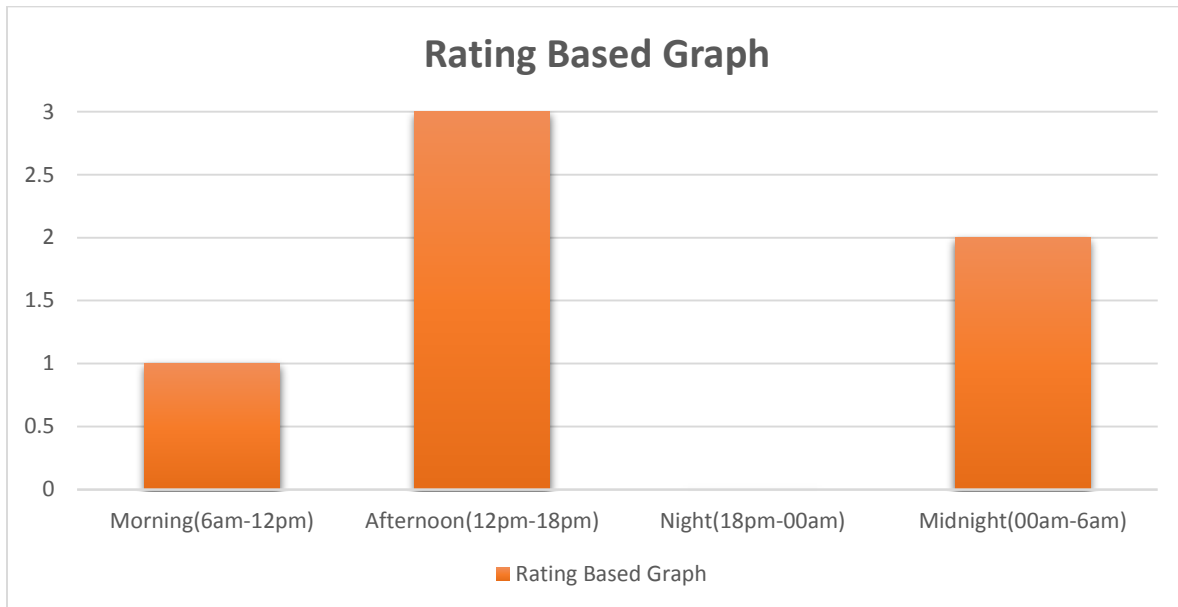


Figure 15: Rating Based Graph

Percentage Analysis:

So the pie chart will show the following crime percentage of different time in Uttara calculated by our algorithm in the app.

Morning Post (1) = 9.1%

Afternoon Post (6) = 54.54%

Night Post (0) = 0%

Midnight Post (4) = 36.36%

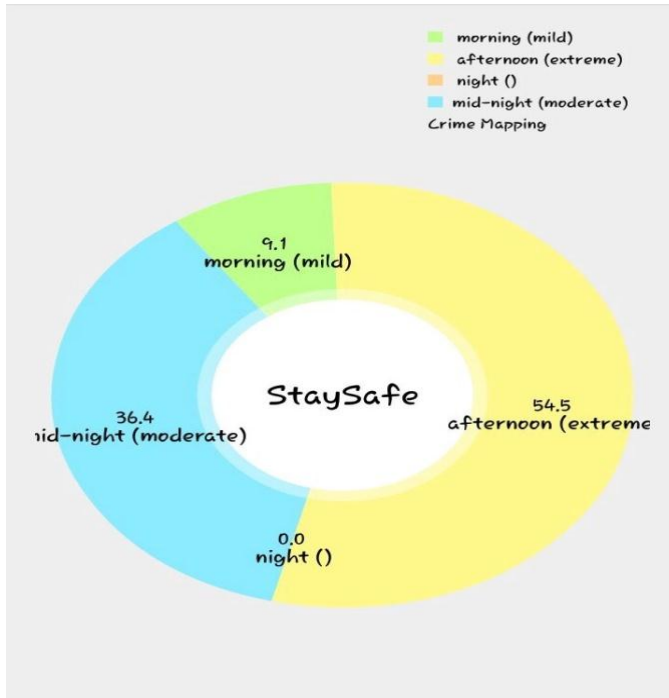


Figure 16: Rating Based Pie chart

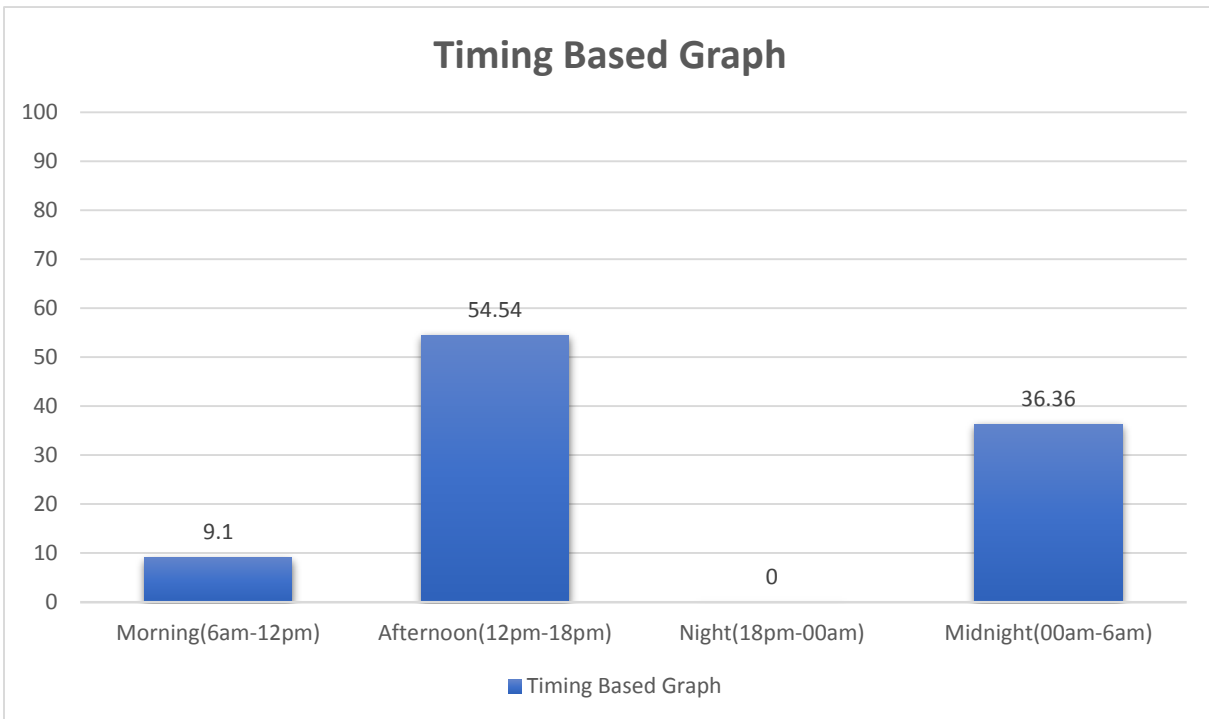


Figure 17: Data Percentage Graph

5.2 Result and Analysis

In the wake of building up the structure we tried for our fancied yield to become more acquainted with our framework's precision. The testing was very effective. We figured out how to have group of information for our testing from various zones with various assessments [7]. Subsequent to examining those we effectively show zones as per their crime occurrences rate. For knowing the fruitful usage of the pie diagram indicating particular territory's chance events as per 24 hours' time traverse, we chose a particular region (Uttara) to watch the entirety. For some days we simply examined the wrongdoing reports originating from that range of various circumstances[13]. The outcome came precisely demonstrating the best possible rate of wrongdoing occurrences of that range in light of time. In this manner we have an effectively running coveted exact framework.

5.3 Discussion

People will see the chart exhibiting wrongdoing level as showed by areas with periods, so when a range require more concentration that will be recognized. Posts of wrongdoing event will offer people to move around outside and to be shielded. This venture is a legitimate impression of vote based system where individuals' voice will get an extension to yell out against chances. Each kind of wrongdoing will be highlighted from mass individuals so it will be more stressed to make legitimate move.

5.3.1 Security and Trust

As Creating a simple platform which people can use for their safety purpose was our prime vision. We focused more on each and every safety issues. Every data is calculated to extract safety perception for providing safe movement. As people from all aspects are involved here and their given data is checked through authentication so a trust worthy system we are ensuring. People trust on our system will accumulate the success of our project.

5.3.2 Availability

As our project is a proto-type at present our system is available only in Dhaka for some area based zone. But being an open source system and having Android version its availability is widely possible. Its success depends on its more and more uses and analyzing data simultaneously. Once the whole country's crime data come within this system, people of all over the country can use this system. Being an android version, it is also possible to pursue similar kind of service using the same model in others country especially third world countries like Bangladesh where crime is a common and important concern to fight.

5.3.3 Social Impact

- Posts of crime occurrence will give individuals to move around outside and to be sheltered.
- Individuals will see the diagram demonstrating crime level as indicated by regions with eras, so when a range need more focus that will be distinguished.
- The crime mapping will help people to know the crime rating. So people will be more conscious to fight against these occurrences.
- The proper use of the system will help to reduce crime rate and to be safe outside.
- As individuals of all perspectives can know the crime rating, their development will be all the more simple, openly and less stressed.
- Every type of crime will be highlighted from mass people so it will be more emphasized to take proper action.
- Women safety will get more scope to flourish.
- This project is a proper reflection of democracy where people's voice will get a scope to shout out against odds.

CHAPTER 6

Conclusion

6.1 Conclusion

In conclusion summing up the whole we want to say that in our project we will deploy a crime map system, which will investigate the theory of crowd sourcing crime incidents by gathering crime reports from the crowd. Crime mapping can play an important role in the policing and crime reduction process, from the first stage of data collection through to the monitoring and evaluation of any targeted responses with the progress of Geographic Information System (GIS) and Internet. Near future there will be features which will send mails to nearby police stations immediately after detecting an extreme crime report posted by registered users so that proper actions against the crime do not take long time to proceed. We will try to make our android app so much useable and flexible so that people of all aspects can easily adopt it and help everyone not to become a victim of crime as much as possible. We will try our best to represent our app in front of Government so that it can be helpful for the people of country-wide as its outcome in crime decreasing is that much beneficial. The accuracy and efficiency of our project will not only help social life to more relax able but also economic perspectives which are hindered due to criminal actions can also be banefully achieved. We sincerely hope that the crowdsourcing crime applications will be widely used in the future and will help police work and bring convenience and benefits to the people all over the world.

6.2 Limitations

6.2.1 Application Programming interface

The information separate module is depends much on the organization of interpersonal organization administrations. In our cases, the constant traits required spilling APIs, which is not gave to normal designer. Also, the theme seek API is constrained to just gave 200 smaller scale blog comes about under ione subject.

6.2.2 Open Government Data

For investigating information in an immense way, we couldn't get such dependable organized information. On the off chance that we can have the open government information, for various source our framework will more probable and helpful. Essentially, from day by day news source (online bdnews24.com,) we may get some data on wrongdoing so that the framework will be more instructive for the clients.

6.2 Future Work

In future, our venture can be reached out by adding different components to make the framework more effective and helpful for the general individuals. There will be an adding highlight to send wrongdoing alarm to the enlisted clients through application wherever there happens any wrongdoing. There will likewise a component that will work together our framework with other wellbeing application. And additionally, a SMS alarm to the enrolled clients. Unapproved posts will be set apart as reported. Following transportation arrangement of a particular wrongdoing porn

range. In addition, sending an email to the close-by police headquarters instantly when wrongdoing happens. In future we will try to use our system more practically and functionally.

➤ **Email Sending Option**

In our next phase we will try to send Email notifications to the nearby police stations for every crime reports coming from specific areas. So that the authority of that area will become more conscious and take measures to prevent those crimes [10]. It will be very helpful to the law enforcing authority to maintain peace if they could where and when they need to become more active for providing security purpose.

➤ **Adding video and photo in GUI**

At present our GUI or Graphical User Interface is not viewing user's audio and video crime posts. But in future our system will definitely show the audio and video posts of users in the News feed of the system [9]. It will provide more clear visualization of crime incidents provided by the users of different areas in different times.

➤ **SMS and E-mail Alert**

In future we will try to increase our system's features by ending crime alert through SMS or Email to our registered users. It will ensure that the users of our system are able to keep safety measures being offline. It will help the users for moving place to place in different time more safely.

➤ **Report and Comment Option**

In future people using the system will be able to place comments and report against any crime posts if they have doubt in the reliability and existence of that specific post. It will ensure more authenticate system to the users.

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