Geo-location based Search Tool for Tweets

Submitted by
Md. Aminur Rahman
ID: 2015-1-96-004
Spring 2016.

Supervised by
Dr. Mohammad Rezwanul Huq
Assistant Professor
Department of Computer Science and Engineering, EWU.

East West University, Bangladesh

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The project has been submitted to the Department of Computer Science and Engineering at East West University in the partial fulfillment of the requirement for the degree of Masters in Computer Science and Engineering.

East West University
Dept. of Computer Science and Engineering
Spring 2016

Abstract

The project finds tweets from different geo-locations dynamically selected by the user from an interactive map. It will also give some more filter options like keywords, hash tags, radius and popularity to give more specific tweets just outside of twitter. It has a very simple and responsive interface to make this tool easily understandable and usable for any device based system. By a single click this tool will give the latest hundred tweets sorted by posting time and specific location selected by the user.

Declaration

The project has been submitted to the Department of Computer Science and Engineering at East West University in the partial fulfillment of the requirement for the degree of Masters in Computer Science and Engineering performed by me under supervision of Dr. Mohammad Rezwanul Huq, Assistant Professor, Dept. of CSE at East West University. This is also needed to certify that, the project work under the course 'Master's Project (CSE 597)'.

I, hereby declare that this project has not been submitted elsewhere for the requirement of any degree or diploma or any other purpose.

Signature of the candidate

____

Md. Aminur Rahman

Letter of Acceptence

This project is entitled "Geo-location Based Search Tool for Tweets" submitted by Md.Aminur Rahman ID No : 2015-1-96-004 to the Department of CSE, East West University, Dhaka-1212,Bangladesh is accepted by the Department for the partial fullfillment of requirements for the degree of MS in CSE August,2016

Board of Examiners :

Supervisor :

Dr.Mohammad Rezwanul Huq
Assistant Professor
Department of Computer Science & Engineering
East West University
Dhaka, Bangladesh

Chairperson :

Dr. Md. Mozammel Huq Azad Khan
Professor & Chairperson
Department of Computer Science & Engineering
East West University
Dhaka, Bangladesh

Acknowledgement

First of all I would like to convey my thanks and gratitude to the Almighty Allah, for his immeasurable grace and profound kindness. Today I am successful in completing my works.

I am heartily grateful to my project supervisor Dr. Mohammad Rezwanul Huq, Assistant Professor, Computer Science & Engineering Department, East West University for his continuous support and inspiration. Without his support and guidense this project could not be completed in this way.

I am also grateful to my parents. Without their love courage and support I wouldn’t had achieved this far.

I would like to thank all the teachers and faculty members of Computer Science and Engineering Department of East West University for their valueable time spend in requirement analysis and evaluation of the project work.

Md. Aminur Rahman

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Chapter 1 :: INTRODUCTION

1.1 Geo-location Based Search Tool for Tweets.

Today social media is a great resource for public thoughts. But there is a lack of a tools that can dynamically grab tweets or posts from different geo-locations. Even twitter doesn’t have an option where we can find tweets by map based geo-location.

So there is a need of a search tool that can search posts from any geo-location s along with some filters like keyword, hashtags, radious of area, popularity etc.

Twitter is one of the most popular social media. In this project i search tweets from twitter applying some dynamic filtering and also map for geo-location selection and throw the first hundred tweets for further use. Initially the posts are shown onpage and any user can further use the posts for various works like saving in a database, using for other websites or analize tweets.

In web development world, tools are one of the most powerful part of creative works. This dynamic search tool will be a big help for the developers who wants to work with twitter data and want geo-location based tweets and can also give users the opportunity to select any geo-location along with hashtags, keywords an radious.

1.2 Objective

The objective of my project is to find tweets from different geo-location s dynamically selectable by the user. It will also give some more filter options like keywords, hashtags, radious and popularity to give more specific tweets just outside of twitter. Simple and responsive interface to make this tool easily understandable and usable for any device based system. By a single click this tool will give the latest hundred tweets sorted by posting time and specific location selected by the user.

1.3 Methodology

Into my analysing part first extract data for the selected particular geo-location by the user with the help of google map latitude and longitude. Then put a filter into my code to filter those data .The reason to my filtering data here is to give more spacific outputs. Into my user end again put my second filter to categorised those data and present those data to users in a comfortable format. Analize sites also can collect data through may tool to get dynamic geo-location based tweets.

The data are collected from Twitter.One question may arise that why not other popular social media? In Facebook, the authority didn't permit us to extract data from another unkown users and so the others. Twitter give this facilityfor the developers to extract data and filter those.

1.4 Issue that Consider to design this project

A tool should be light and functional.It must load quickly and should be easy to understand by users.To design the toolI spent time in planning. While designing the system I kept some issues in mind.Those are given bellow-

- Is the geo-location dynamically selectable?
- Does the searched information extracted correctly?
- Is the tool user friendly?
- Is the interface user firendly?
- Is the system fast?
- Dose the user get information in easiest way?

1.5 The System Development Life Cycle

To develop a user friendly dynamic tool the system development lifecycle must be followed. Here the requirement analysis part is the most importent part to make the system user friendly. After analysing user requirements the stages go further like the given Figure 1.1.

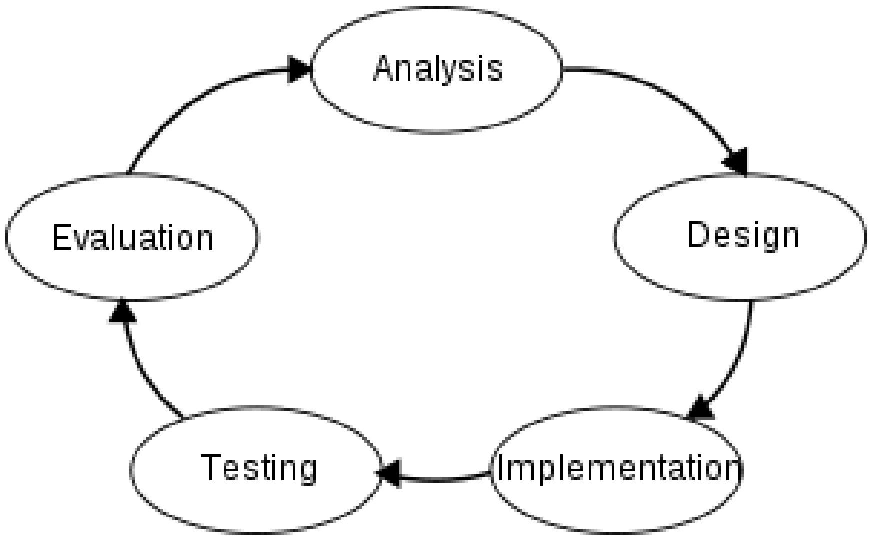


Figure 1.1: System Development Life Cycle

1.6 Flexible User Interface

One of the major focus of my project is to give aflexible user interface. So here we used Google Map API to integrate a real-time map for dynamic geo-location selection by user. By default the location is selected to Dhaka, Bangladesh with 1KM of radius.

Here a search filter is also added to give more dynamic searchable result. Here the tweets owner's url is also added that one user can go into the tweetsowners profile.Our extracting engine is so strong to extract qualified data. Here user can also search by keyword and hashtags along with google map selectable geo-location that give them more specific tweets.

1.7 Summary

In this chapter I discuss about the existing system.My objective comes very clear from this chapter.Here I discussed about the system development life cycle and I follow that. I discussed about the main focus area of this project any the represent descriptive ways that the system follow.

Chapter 2 :: SYSTEM ANALYSIS

2.1Introduction

The System analysis is a details study of the various operations performed by the existing system and their relationship within and outside of the system.One aspect of analysis is defining the boundaries of the system and determining whether or not a candidate system should consider other related systems.

2.2Steps ofSystem Analysis

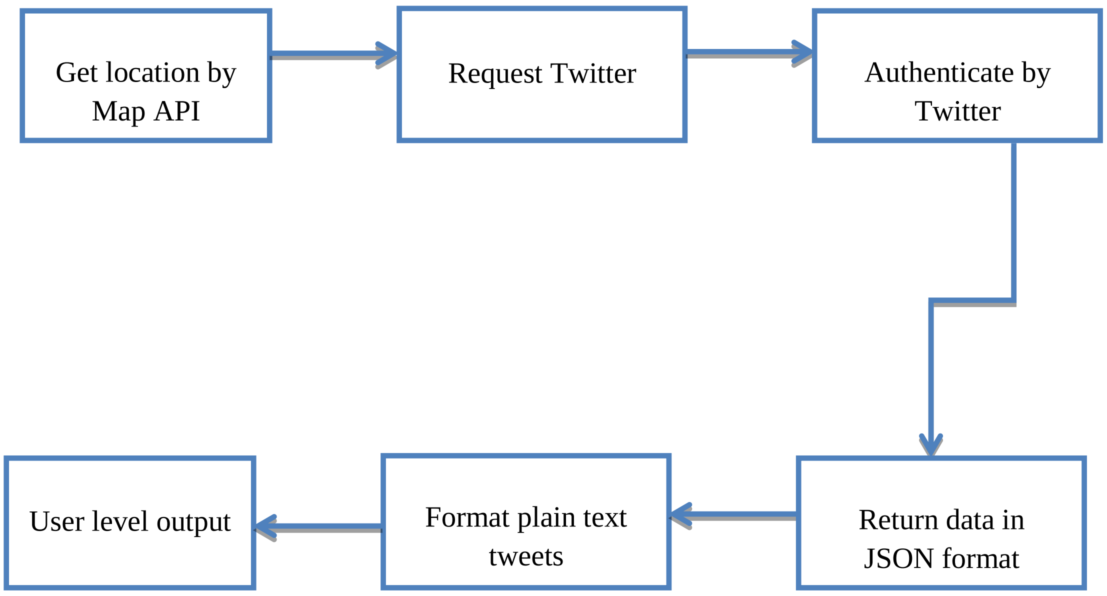


Figure 2.1:Block Diagram of System Analysis

Here I complete system analysis by the extract twitter data,put those data into search filters,output analysis,and more search options existing system.

2.3Twitter API Analysis

Twitter API gives the opportunity to request twitter for his public post data. By knowing a server side scripting language like PHP, Python or ruby we can make requests to twitter API and results would be in JSON format that can be easily read by the program.

Here twitter API data can be extract easily by using their resources.I work on PHP based Twitter API. That help me to integrate myPHPbased search module with the Twitter data.

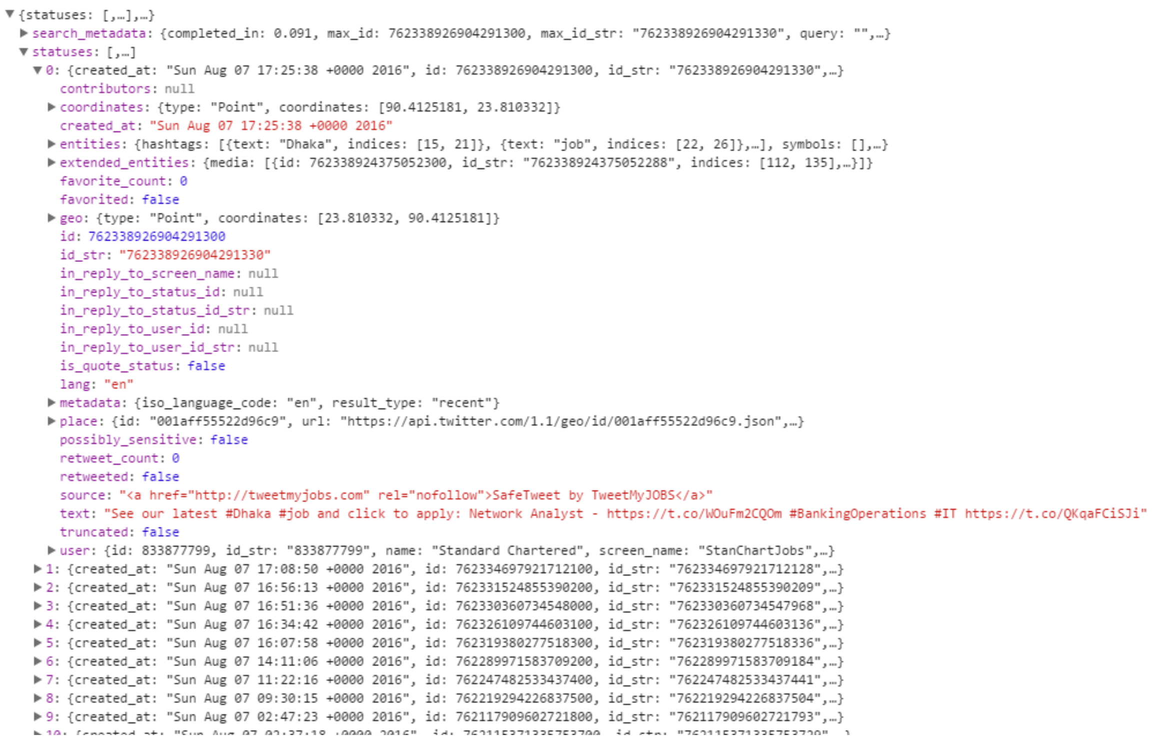
2.4 Twitter Data Collection API

Using Twitter API’s search filter we can collect lots of data and those data are needed to be managed into a proper way that anyone can able to analyze on those data and produce interesting information or pattern.

The goal of designingtwitter search tool is to make data collection easy,logical and error free as much as possible.While manipulating data, we need to have:

- Understanding of PHP API integration for Twitter.
- Clear concept of JSON data format.
- Understanding of Twitter search parameters.
- Understanding of HTTP requests and error handling.

In this tool I collected twitter data through HTTP GET method of twitter API. The returned data was in JSON format and then use a custom JavaScript function to reformat the plain text post into twitter like HTML.



```
▼{statuses: [,…],…}
  ▶search_metadata: {completed_in: 0.091, max_id: 762338926904291300, max_id_str: "762338926904291330", query: "",…}
  ▼statuses: [,…]
    ▼0: {created_at: "Sun Aug 07 17:25:38 +0000 2016", id: 762338926904291300, id_str: "762338926904291330",…}
      contributors: null
     ▶coordinates: {type: "Point", coordinates: [90.4125181, 23.810332]}
      created_at: "Sun Aug 07 17:25:38 +0000 2016"
     ▶entities: {hashtags: [{text: "Dhaka", indices: [15, 21]}, {text: "job", indices: [22, 26]},…], symbols: [],…}
     ▶extended_entities: {media: [{id: 762338924375052300, id_str: "762338924375052288", indices: [112, 135],…}]}
      favorite_count: 0
      favorited: false
     ▶geo: {type: "Point", coordinates: [23.810332, 90.4125181]}
      id: 762338926904291300
      id_str: "762338926904291330"
      in_reply_to_screen_name: null
      in_reply_to_status_id: null
      in_reply_to_status_id_str: null
      in_reply_to_user_id: null
      in_reply_to_user_id_str: null
      is_quote_status: false
      lang: "en"
     ▶metadata: {iso_language_code: "en", result_type: "recent"}
     ▶place: {id: "001aff55522d96c9", url: "https://api.twitter.com/1.1/geo/id/001aff55522d96c9.json",…}
      possibly_sensitive: false
      retweet_count: 0
      retweeted: false
      source: "<a href="http://tweetmyjobs.com" rel="nofollow">SafeTweet by TweetMyJOBS</a>"
      text: "See our latest #Dhaka #job and click to apply: Network Analyst - https://t.co/WOuFm2CQOm #BankingOperations #IT https://t.co/QKqaFCiSJi"
      truncated: false
     ▶user: {id: 833877799, id_str: "833877799", name: "Standard Chartered", screen_name: "StanChartJobs",…}
    ▶1: {created_at: "Sun Aug 07 17:08:50 +0000 2016", id: 762334697921712100, id_str: "762334697921712128",…}
    ▶2: {created_at: "Sun Aug 07 16:56:13 +0000 2016", id: 762331524855390200, id_str: "762331524855390209",…}
    ▶3: {created_at: "Sun Aug 07 16:51:36 +0000 2016", id: 762330360734548000, id_str: "762330360734547968",…}
    ▶4: {created_at: "Sun Aug 07 16:34:42 +0000 2016", id: 762326109744603100, id_str: "762326109744603136",…}
    ▶5: {created_at: "Sun Aug 07 16:07:58 +0000 2016", id: 762319380277518300, id_str: "762319380277518336",…}
    ▶6: {created_at: "Sun Aug 07 14:11:06 +0000 2016", id: 762289971583709200, id_str: "762289971583709184",…}
    ▶7: {created_at: "Sun Aug 07 11:22:16 +0000 2016", id: 762247482533437400, id_str: "762247482533437441",…}
    ▶8: {created_at: "Sun Aug 07 09:30:15 +0000 2016", id: 762219294226837500, id_str: "762219294226837504",…}
    ▶9: {created_at: "Sun Aug 07 02:47:23 +0000 2016", id: 762117909602721800, id_str: "762117909602721793",…}
```

Figure 2.2: JSON response from Twitter

2.5 User Interface

User interface is the most important part of a search tool as this is the only method of interaction with the end-user.Effeciency and reliability regardless of platform, browser and devices was the main concert during the user interface design. I have tested the interface in different devices including hand-held gadgets, smartphones etc. to ensure best user experience for everyone.

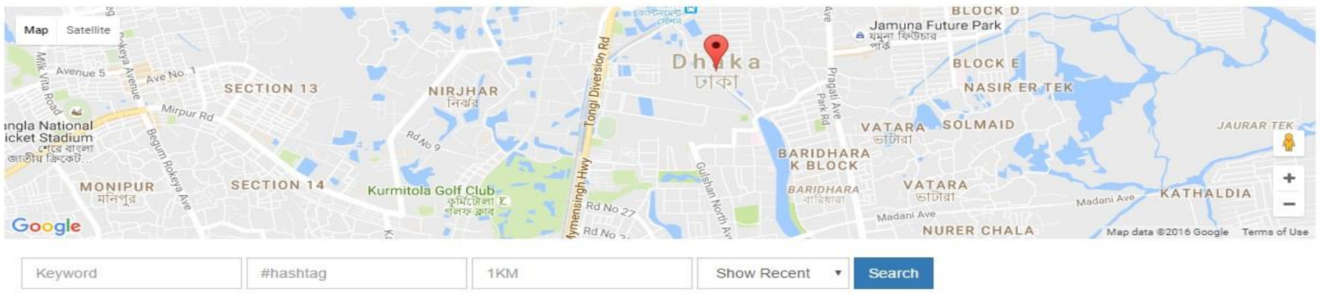
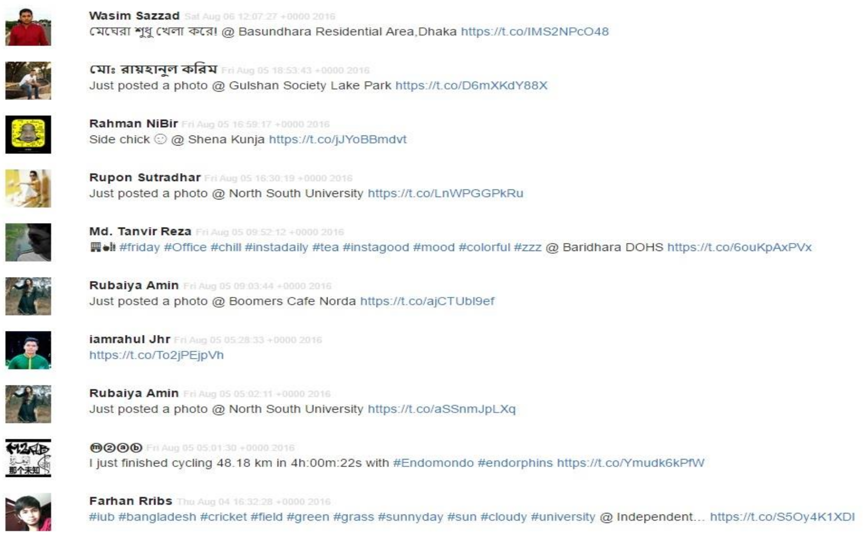


Figure 2.3: Search fields

I have presented user with a set of search fields and a interactive map to set the search criteria. Then based on the search parameters I have fetched tweets from Twitter using the API and displayed in a very user friendly way.



Wasim Sazzad Sat Aug 06 12:07:27 +0000 2016
মেঘেরা শুধু খেলা করে! @ Basundhara Residential Area,Dhaka https://t.co/IMS2NPcO48

মোঃ রায়হানুল করিম Fri Aug 05 18:53:43 +0000 2016
Just posted a photo @ Gulshan Society Lake Park https://t.co/D6mXKdY88X

Rahman NiBir Fri Aug 05 16:59:17 +0000 2016
Side chick ☺ @ Shena Kunja https://t.co/jJYoBBmdvt

Rupon Sutradhar Fri Aug 05 16:30:19 +0000 2016
Just posted a photo @ North South University https://t.co/LnWPGGPkRu

Md. Tanvir Reza Fri Aug 05 09:52:12 +0000 2016
▦●ıl #friday #Office #chill #instadaily #tea #instagood #mood #colorful #zzz @ Baridhara DOHS https://t.co/6ouKpAxPVx

Rubaiya Amin Fri Aug 05 09:03:44 +0000 2016
Just posted a photo @ Boomers Cafe Norda https://t.co/ajCTUbI9ef

iamrahul Jhr Fri Aug 05 05:28:33 +0000 2016
https://t.co/To2jPEjpVh

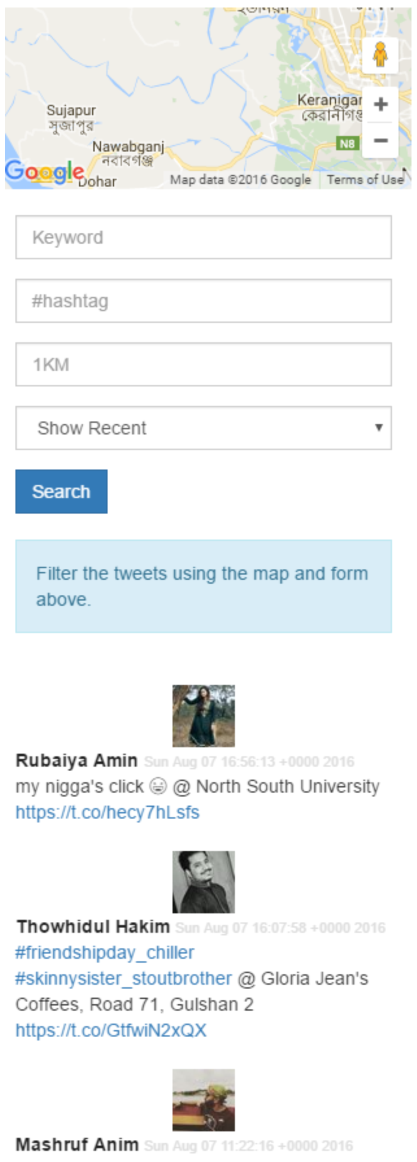
Rubaiya Amin Fri Aug 05 05:02:11 +0000 2016
Just posted a photo @ North South University https://t.co/aSSnmJpLXq

ⓜ②ⓐⓑ Fri Aug 05 05:01:30 +0000 2016
I just finished cycling 48.18 km in 4h:00m:22s with #Endomondo #endorphins https://t.co/Ymudk6kPfW

Farhan Rribs Thu Aug 04 16:32:28 +0000 2016
#iub #bangladesh #cricket #field #green #grass #sunnyday #sun #cloudy #university @ Independent… https://t.co/S5Oy4K1XDI

Figure 2.4: Output of searched data

The user interface is responsive and mobile friendly. Here is an example of the output on a smartphone.



Keyword

#hashtag

1KM

Show Recent

Search

Filter the tweets using the map and form above.

Rubaiya Amin Sun Aug 07 16:56:13 +0000 2016
my nigga's click 😆 @ North South University
https://t.co/hecy7hLsfs

Thowhidul Hakim Sun Aug 07 16:07:58 +0000 2016
#friendshipday_chiller
#skinnysister_stoutbrother @ Gloria Jean's Coffees, Road 71, Gulshan 2
https://t.co/GtfwiN2xQX

Mashruf Anim Sun Aug 07 11:22:16 +0000 2016

Figure 2.5: Responsive output

2.6 Summary

In this Chapter here discuss about the system analysis by extract twitter data,Twitter API analysis,Twitter data collection manager,filter,output data analysis.In chapter three we discusee about the implementation part of my project.

Chapter 3 :: SYSTEM DESIGN

3.1 Introduction

Twitter is one of the most popular social media to represnt people's thoughts. It also offers a great API to gather data from public Tweets. A tool to search, filter, categorize and fetch the tweets can be very useful to understand people and culture of a certain area. This can be great for market anlaysis or even tracking any latest event.

From this point of view I have developed a tool which give searches for tweets that are posted within a certain area. This tool also have the feature to filter the tweets based on keywords, hashtags and radius from a certain geo-location.

3.2 Steps of Operation

The main operation are :

- Collect search criteria from user
- Send request to Twitter using the API
- Authenticate request by Twitter
- Extract JSON data from Twitter
- Format plain text tweets into Twitter styled HTML
- Repesent it to the users

3.3Flow of data and request segments

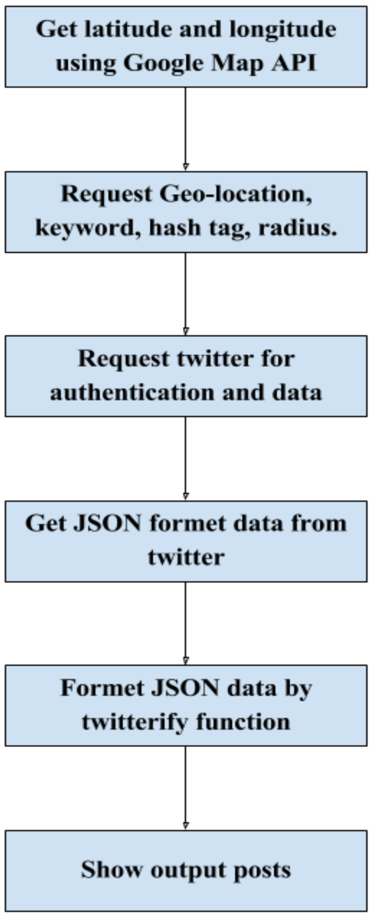
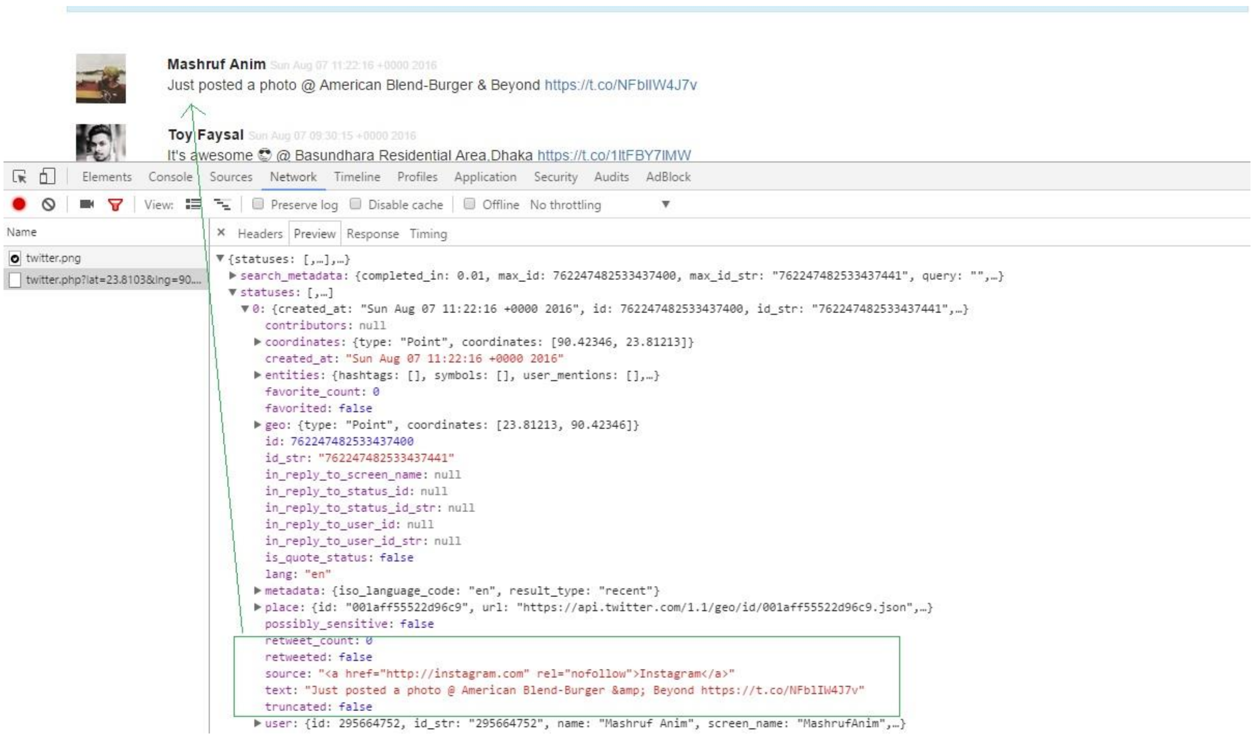

Get latitude and longitude using Google Map API
Request Geo-location, keyword, hash tag, radius.
Request twitter for authentication and data
Get JSON formet data from twitter
Formet JSON data by twitterify function
Show output posts

Figure 3.1: Flow of data and requests

3.4 Twitterify functionality

This is a JavaScript based function designed by me to convert plain text tweets to display URLs, mentions and hash tags properly in twitter-like format. The code is at APPENDIX [4].



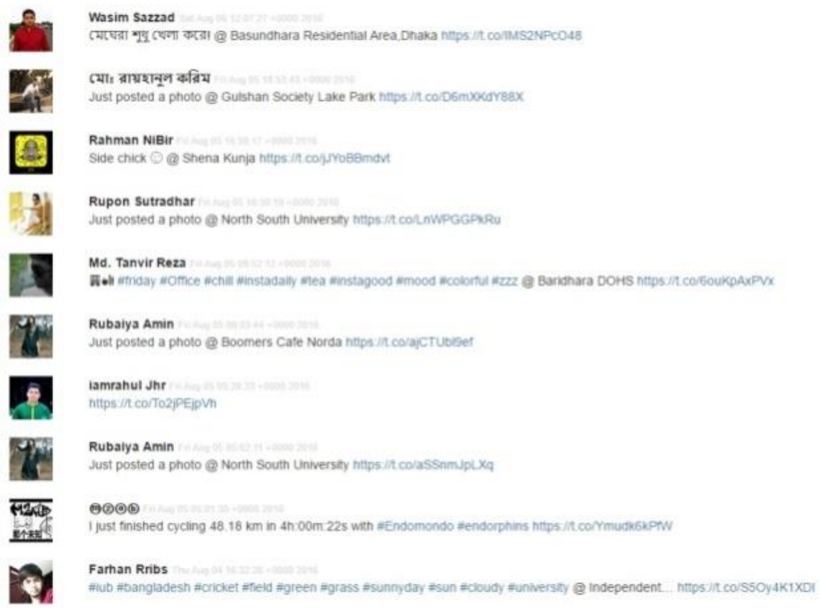
Mashruf Anim Sun Aug 07 11:22:16 +0000 2016
Just posted a photo @ American Blend-Burger & Beyond https://t.co/NFbIIW4J7v

Toy Faysal Sun Aug 07 09:30:15 +0000 2016
It's awesome 😎 @ Basundhara Residential Area,Dhaka https://t.co/1ltFBY7IMW

```
▼{statuses: [,…],…}
 ▶search_metadata: {completed_in: 0.01, max_id: 762247482533437400, max_id_str: "762247482533437441", query: "",…}
 ▼statuses: [,…]
  ▼0: {created_at: "Sun Aug 07 11:22:16 +0000 2016", id: 762247482533437400, id_str: "762247482533437441",…}
     contributors: null
    ▶coordinates: {type: "Point", coordinates: [90.42346, 23.81213]}
     created_at: "Sun Aug 07 11:22:16 +0000 2016"
    ▶entities: {hashtags: [], symbols: [], user_mentions: [],…}
     favorite_count: 0
     favorited: false
    ▶geo: {type: "Point", coordinates: [23.81213, 90.42346]}
     id: 762247482533437400
     id_str: "762247482533437441"
     in_reply_to_screen_name: null
     in_reply_to_status_id: null
     in_reply_to_status_id_str: null
     in_reply_to_user_id: null
     in_reply_to_user_id_str: null
     is_quote_status: false
     lang: "en"
    ▶metadata: {iso_language_code: "en", result_type: "recent"}
    ▶place: {id: "001aff55522d96c9", url: "https://api.twitter.com/1.1/geo/id/001aff55522d96c9.json",…}
     possibly_sensitive: false
     retweet_count: 0
     retweeted: false
     source: "<a href="http://instagram.com" rel="nofollow">Instagram</a>"
     text: "Just posted a photo @ American Blend-Burger &amp; Beyond https://t.co/NFblIW4J7v"
     truncated: false
    ▶user: {id: 295664752, id_str: "295664752", name: "Mashruf Anim", screen_name: "MashrufAnim",…}
```

Figure 3.2: Formatted JSON data displayed in browser

Formatted output presented to user:



Wasim Sazzad Sat Aug 06 12:07:27 +0000 2016
মেঘেরা শুধু খেলা করে! @ Basundhara Residential Area,Dhaka https://t.co/IMS2NPcO48

মোঃ রায়হানুল করিম Fri Aug 05 18:53:43 +0000 2016
Just posted a photo @ Gulshan Society Lake Park https://t.co/D6mXKdY88X

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Rupon Sutradhar Fri Aug 05 16:30:19 +0000 2016
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Md. Tanvir Reza Fri Aug 05 09:52:12 +0000 2016
🍵 #friday #Office #chill #instadaily #tea #instagood #mood #colorful #zzz @ Baridhara DOHS https://t.co/6ouKpAxPVx

Rubaiya Amin Fri Aug 05 09:03:44 +0000 2016
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iamrahul Jhr Fri Aug 05 05:28:33 +0000 2016
https://t.co/To2jPEjpVh

Rubaiya Amin Fri Aug 05 05:02:11 +0000 2016
Just posted a photo @ North South University https://t.co/aSSnmJpLXq

ⓜⓟⓞⓑ Fri Aug 05 01:31:30 +0000 2016
I just finished cycling 48.18 km in 4h:00m:22s with #Endomondo #endorphins https://t.co/Ymudk6kPfW

Farhan Rribs Thu Aug 04 16:32:28 +0000 2016
#iub #bangladesh #cricket #field #green #grass #sunnyday #sun #cloudy #university @ Independent… https://t.co/S5Oy4K1XDI

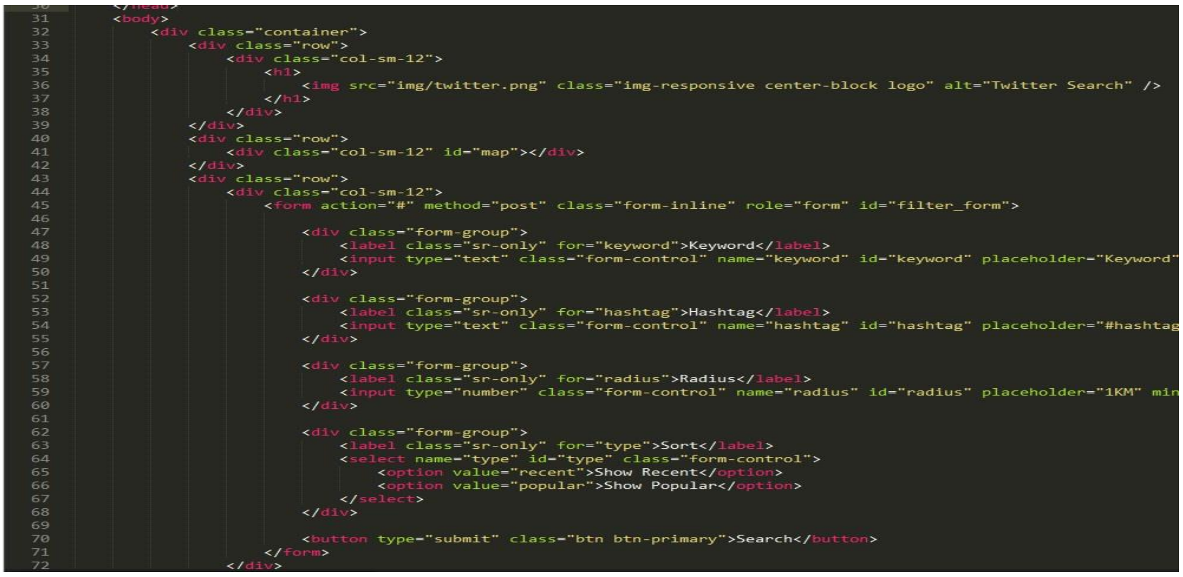
Figure 3.3: User output

3.5 Search form

I have created an interactive search form to collect search criteria from user. The form includes following fields:

- Map to select geo-location
- Field to input keywords
- Field to input hashtags
- Field to input search radius
- Field to input result type

HTML for the form can be seen in the screenshot below:

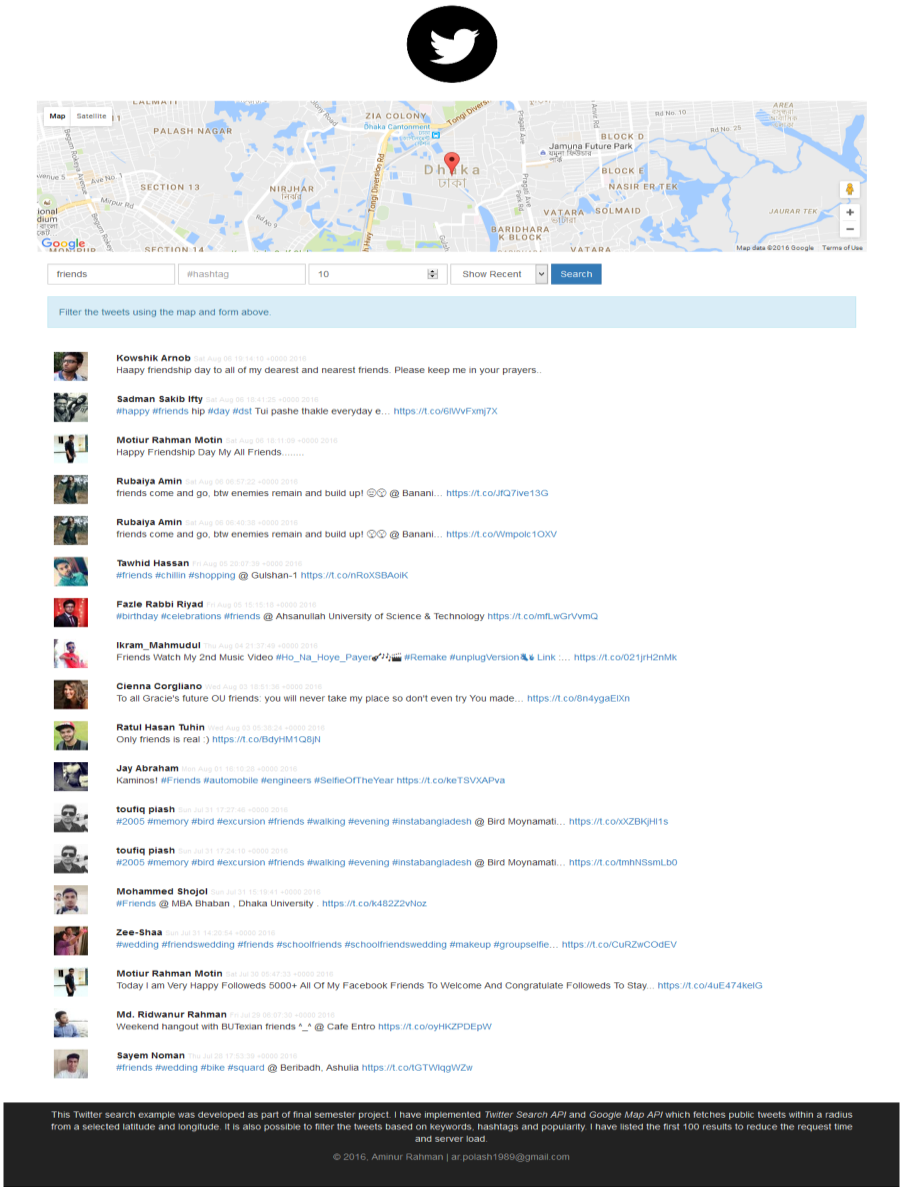


```
    </head>
    <body>
        <div class="container">
            <div class="row">
                <div class="col-sm-12">
                    <h1>
                        <img src="img/twitter.png" class="img-responsive center-block logo" alt="Twitter Search" />
                    </h1>
                </div>
            </div>
            <div class="row">
                <div class="col-sm-12" id="map"></div>
            </div>
            <div class="row">
                <div class="col-sm-12">
                    <form action="#" method="post" class="form-inline" role="form" id="filter_form">

                        <div class="form-group">
                            <label class="sr-only" for="keyword">Keyword</label>
                            <input type="text" class="form-control" name="keyword" id="keyword" placeholder="Keyword"
                        </div>

                        <div class="form-group">
                            <label class="sr-only" for="hashtag">Hashtag</label>
                            <input type="text" class="form-control" name="hashtag" id="hashtag" placeholder="#hashtag
                        </div>

                        <div class="form-group">
                            <label class="sr-only" for="radius">Radius</label>
                            <input type="number" class="form-control" name="radius" id="radius" placeholder="1KM" min
                        </div>

                        <div class="form-group">
                            <label class="sr-only" for="type">Sort</label>
                            <select name="type" id="type" class="form-control">
                                <option value="recent">Show Recent</option>
                                <option value="popular">Show Popular</option>
                            </select>
                        </div>

                        <button type="submit" class="btn btn-primary">Search</button>
                    </form>
                </div>
```

Figure 3.4: Code for search form

3.6 Application Home page

This is our home page. This is the interface for the user to interact with the search tool and filter the tweets.



Filter the tweets using the map and form above.

Kowshik Arnob Sat Aug 06 19:14:10 +0000 2016
Haapy friendship day to all of my dearest and nearest friends. Please keep me in your prayers..

Sadman Sakib Ifty Sat Aug 06 18:41:25 +0000 2016
#happy #friends hip #day #dst Tui pashe thakle everyday e… https://t.co/6lWvFxmj7X

Motiur Rahman Motin Sat Aug 06 18:11:09 +0000 2016
Happy Friendship Day My All Friends........

Rubaiya Amin Sat Aug 06 06:57:22 +0000 2016
friends come and go, btw enemies remain and build up! 😑😨 @ Banani… https://t.co/JfQ7ive13G

Rubaiya Amin Sat Aug 06 06:40:38 +0000 2016
friends come and go, btw enemies remain and build up! 😨😨 @ Banani… https://t.co/Wmpolc1OXV

Tawhid Hassan Fri Aug 05 20:07:39 +0000 2016
#friends #chillin #shopping @ Gulshan-1 https://t.co/nRoXSBAoiK

Fazle Rabbi Riyad Fri Aug 05 15:15:18 +0000 2016
#birthday #celebrations #friends @ Ahsanullah University of Science & Technology https://t.co/mfLwGrVvmQ

Ikram_Mahmudul Thu Aug 04 21:37:49 +0000 2016
Friends Watch My 2nd Music Video #Ho_Na_Hoye_Payer🎸🎶🎬 #Remake #unplugVersion🔦✌ Link :… https://t.co/021jrH2nMk

Cienna Corgliano Wed Aug 03 18:51:36 +0000 2016
To all Gracie's future OU friends: you will never take my place so don't even try You made… https://t.co/8n4ygaElXn

Ratul Hasan Tuhin Wed Aug 03 05:38:24 +0000 2016
Only friends is real :) https://t.co/BdyHM1Q8jN

Jay Abraham Mon Aug 01 16:10:28 +0000 2016
Kaminos! #Friends #automobile #engineers #SelfieOfTheYear https://t.co/keTSVXAPva

toufiq piash Sun Jul 31 17:27:46 +0000 2016
#2005 #memory #bird #excursion #friends #walking #evening #instabangladesh @ Bird Moynamati… https://t.co/xXZBKjHl1s

toufiq piash Sun Jul 31 17:24:10 +0000 2016
#2005 #memory #bird #excursion #friends #walking #evening #instabangladesh @ Bird Moynamati… https://t.co/tmhNSsmLb0

Mohammed Shojol Sun Jul 31 15:19:41 +0000 2016
#Friends @ MBA Bhaban , Dhaka University . https://t.co/k482Z2vNoz

Zee-Shaa Sun Jul 31 14:20:54 +0000 2016
#wedding #friendswedding #friends #schoolfriends #schoolfriendswedding #makeup #groupselfie… https://t.co/CuRZwCOdEV

Motiur Rahman Motin Sat Jul 30 05:47:33 +0000 2016
Today I am Very Happy Followeds 5000+ All Of My Facebook Friends To Welcome And Congratulate Followeds To Stay… https://t.co/4uE474kelG

Md. Ridwanur Rahman Fri Jul 29 06:07:30 +0000 2016
Weekend hangout with BUTexian friends ^_^ @ Cafe Entro https://t.co/oyHKZPDEpW

Sayem Noman Thu Jul 28 17:53:39 +0000 2016
#friends #wedding #bike #squard @ Beribadh, Ashulia https://t.co/tGTWlqgWZw

This Twitter search example was developed as part of final semester project. I have implemented *Twitter Search API* and *Google Map API* which fetches public tweets within a radius from a selected latitude and longitude. It is also possible to filter the tweets based on keywords, hashtags and popularity. I have listed the first 100 results to reduce the request time and server load.

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Figure 3.5: List of tweets

3.11 Summary

In this chapter I have discussed about operation functionality, structure data and reformatting plaintext and user interface.

Chapter 4 :: TECHNOLOGIES

4.1 Introduction

Development of the search tool can be divided into two parts. One is the operations part where I have integrated the Twitter API, Google Map API and used PHP and JavaScript to send AJAX request and manipulate response data.

The other part is the user interface where end user is presented with a interactive search form to filter tweets and see the search results. I have used HTML5 and CSS3. I have used Bootstrap 3.x library to implement responsive layout.

4.2 Twitter API

Twitter is aPHP based Twitter API.Withthis, one can easily integrate PHP application with the Twitter services. It is an official library.

Twitter API is featuring:

- PHP based functionality.
- Google map API integration possible
- Built-in Authentication support
- JSON data output

4.3System Requirements

We need Apache 2.x based server with PHP 5.2 or higher to run the search tool. End user can use any modern browser to access the user interface.

4.4 Google maps API

Map API is the most popular way of integrating maps into a system or tool. IT provides total Google map usable for a developer for his purpose.

By using the Google Maps API, it is possible to embed Google Maps site into an external website, on to which site specific data can be overlaid. Although initially only a JavaScript API, the Maps API was expanded to include an API for Adobe Flash applications (but this has been deprecated), a service for retrieving static map images, and web services for performing geocoding, generating driving directions, and obtaining elevation profiles. Over 1,000,000 web sites use the Google Maps API, making it the most heavily used web application development API.

4.5 Xampp

XAMPP is a free and open source cross-platform web server solution stack package developed by Apache Friends,consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.XAMPP stands for Cross-Platform (X), Apache (A), MariaDB (M), PHP (P) and Perl (P). It is a simple, lightweight Apache distribution that makes it extremely easy for developers to create a local web server for testing and deployment purposes. Everything needed to set up a web server – server application (Apache), database (MariaDB), and scripting language (PHP) – is included in an extractable file. XAMPP is also cross-platform, which means it works equally well on Linux, Mac and Windows. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server extremely easy as well.

4.6PHP

PHP: Hypertext Preprocessor is a server-side scripting language designed for web development but also used as a general-purpose programming language. Originally created by Rasmus Lerdorf in 1994, the PHP reference implementation is now produced by The PHP Group. PHP originally stood for Personal Home Page, but it now stands for the recursive acronymPHP: Hypertext Preprocessor.

PHP code may be embedded into HTML code, or it can be used in combination with various web template systems, web content management systems and web frameworks. PHP code is usually processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable. The web server combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. PHP code may also be executed with a command-line interface (CLI) and can be used to implement standalone graphical applications.

The standard PHP interpreter, powered by the Zend Engine, is free software released under the PHP License. PHP has been widely ported and can be deployed on most web servers on almost every operating system and platform, free of charge.

The PHP language evolved without a written formal specification or standard until 2014, leaving the canonical PHP interpreter as a *de facto* standard. Since 2014 work has gone on to create a formal PHP specification.

During the 2010s there have been increased efforts towards standardisation and code sharing in PHP applications by projects such as PHP-FIG in the form of PSR-initiatives as well as Composer dependency manager and the Packagist repository.

4.7 HTML

Along with CSS, and JavaScript, HTML is a cornerstone technology used to create web pages,as well as to create user interfaces for mobile and web applications. Hyper Text Markup Language, commonly abbreviated as HTML, is the standard markup language used to create web pages.Web browsers can read HTML files and render them into visible or audible web pages. HTML describes the structure of a websitesemantically and, before the advent of Cascading Style Sheets (CSS), included cues for the presentation or appearance of the document (web page), making it a markup language, rather than a programming language.

HTML elements form the building blocks of HTML pages. HTML allows images and other objects to be embedded and it can be used to create interactive forms. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by *tags*, written using angle brackets. Tags such as `<img />` and `<input />` introduce content into the page directly. Others such as `<p>...</p>` surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

HTML can embed scripts written in languages such as JavaScript which affect the behavior of HTML web pages. HTML markup can also refer the browser to

Cascading Style Sheets (CSS) to define the look and layout of text and other material. The World Wide Web Consortium (W3C), maintainer of both the HTML and the CSS standards, has encouraged the use of CSS over explicit presentational HTML since 1997.

4.8 CSS

CSS is designed primarily to enable the separation of document content from document presentation, including aspects such as the layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple HTML pages to share formatting by specifying the relevant CSS in a separate file, and reduce complexity and repetition in the structural content.

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language.Although most often used to set the visual style of web pages and user interfaces written in HTML and XHTML, the language can be applied to any XML document, including plain XML, SVG and XUL, and is applicable to rendering in speech, or on other media. Along with HTML and JavaScript, CSS is a cornerstone technology used by most websites to create visually engaging webpages, user interfaces for web applications, and user interfaces for many mobile applications.

This separation of formatting and content makes it possible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech-based browser or screen reader) and on Braille-based, tactile devices. It can also be used to display the web page differently depending on the screen size or device on which it is being viewed. Readers can also specify a different style sheet, such as a CSS file stored on their own computer, to override the one the author has specified.

Changes to the graphic design of a document (or hundreds of documents) can be applied quickly and easily, by editing a few lines in the CSS file they use, rather than by changing markup in the documents.

The CSS specification describes a priority scheme to determine which style rules apply if more than one rule matches against a particular element. In this so-called *cascade*, priorities (or *weights*) are calculated and assigned to rules, so that the results are predictable.

4.9 JavaScript

JavaScript is a high-level, dynamic, untyped, and interpreted programming language. It has been standardized in the ECMAS cript language specification. Alongside HTML and CSS, it is one of the three core technologies of World Wide Web content production; the majority of websites employ it and it is supported by all modern Web browsers without plug-ins. JavaScript is prototype-based with first-class functions, making it a multi-paradigm language, supporting object-oriented,imperative, and functional programming styles.It has an API for working with text, arrays, dates and regular expressions, but does not include any I/O, such as networking, storage, or graphics facilities, relying for these upon the host environment in which it is embedded.

Although there are strong outward similarities between JavaScript and Java, including language name, syntax, and respective standard libraries, the two are distinct languages and differ greatly in their design. JavaScript was influenced by programming languages such as Self and Scheme.

JavaScript is also used in environments that are not Web-based, such as PDF documents, site-specific browsers, and desktop widgets. Newer and faster JavaScript virtual machines (VMs) and platforms built upon them have also increased the popularity of JavaScript for server-side Web applications. On the client side, JavaScript has been traditionally implemented as an interpreted language, but more recent browsers perform just-in-time compilation. It is also used in game development, the creation of desktop and mobile applications, and server-side network programming with run-time environments such as Node.js.

4.10jQuery

jQuery is a cross-platform JavaScript library designed to simplify the client-side scripting of HTML. jQuery is the most popular JavaScript library in use today, with installation on 65% of the top 10 million highest-trafficked sites on the Web. jQuery is free, open-source software licensed under the MIT License.

jQuery's syntax is designed to make it easier to navigate a document, select DOM elements, create animations, handle events, and develop

Ajaxapplications. jQuery also provides capabilities for developers to create plug-ins on top of the JavaScript library. This enables developers to create abstractions for low-level interaction and animation, advanced effects and high-level, theme able widgets. The modular approach to the jQuery library allows the creation of powerful dynamic web pages and Web applications.

The set of jQuery core features—DOM element selections, traversal and manipulation—enabled by its *selector engine* (named "Sizzle" from v1.3), created a new "programming style", fusing algorithms and DOM data structures. This style influenced the architecture of other JavaScript frameworks like YUI v3 and Dojo, later stimulating the creation of the standard *Selectors API*.

Microsoft and Nokia bundle jQuery on their platforms. Microsoft includes it with Visual Studio for use within Microsoft's ASP.NET AJAX and ASP.NET MVC frameworks while Nokia has integrated it into the Web Run-Time widget development platform. jQuery has also been used in Media Wiki since version 1.16.

4.11 Bootstrap

Originally created by a designer and a developer at Twitter, Bootstrap has become one of the most popular front-end frameworks and open source projects in the world.

Bootstrap was created at Twitter in mid-2010 by @mdo and @fat. Prior to being an open-sourced framework, Bootstrap was known as *Twitter Blueprint*. A few months into development, Twitter held its first Hack Week and the project exploded as developers of all skill levels jumped in without any external guidance. It served as the style guide for internal tools development at the company for over a year before its public release, and continues to do so today.

Originally released on Friday, August 19, 2011, we've since had over twenty releases, including two major rewrites with v2 and v3. With Bootstrap 2, we added responsive functionality to the entire framework as an optional stylesheet. Building on that with Bootstrap 3, we rewrote the library once more to make it responsive by default with a mobile first approach.

4.11 Summary

In this chapter I mainly discussed about the technology that I used in my project.Here I discuss Twitter api,Google map API, xampp.Here I also explain about, PHP,HTML,CSS, JavaScript,JQuery and Bootstrap.In Chapter 5 we discuss about the summary of the saystem.

Chapter 5 :: CONCLUSION

5.1 Traditional System

Before developing this tool many scholar work with twitter data for their analysis or the other thesis work. It is now intorduced whole over the world. But tweets search dynamically by geo-location is a new thought because the scholar are working with twitter data, But they are not conjugate together.Here I conjugate these together and try to show some innovation and search with all possible filters.

5.2 Outcome of The Project

The developed tool has been successfully deployed.I just invited some developers to test the tool . They use it and give me the following feedback in a summarized form:

- Workflow of the frontend is user friendly and efficient enough to work with it.
- Autometically extract and formatdata from twitter made the job of entering new information very simple and time saving.
- Dynamic map is very helpful.
- Advanced searches is really interesting to them.
- Although the system requires more testing and risions,overall user feedback indicated that,if implemented ,such a system can come to a great use of developers.

5.3 Limitations

Due to the limitation of time ,many of the features that could be implemented in the system are absent. There is some problem in twitter text that is not well formed.

- The user are not conscious about how to use their hash tag. They use hash tag within that message.That makes their text bad format. For that reason representation is not so good enough as i expected.
- By using twitter data I can store data and works a lots of analysis but this time Ido not have enough time to do so.

- Limitation of data storage.

However,it cannot be guaranteed that the tool give the best result in its initial run.The project can be expected to achieve its goal

in near future with enough data store and user feedback.

5.4 Future Development

The tool has been developed with future development possibilities in consideration.The object oriented dynamic approach of the tool permits additional of new entities and methods which can be used to interact with existing ones ans to extend the functionalities.I am wish to continue my involvement and contribution to this system for future development operation.

If this application can be implemented properly and completely then it has very big future in development work.

The application have more feature for brings a better impression to the developers. Some of them are given bellow :

- Storage option.
- Make an option for getting news every sub continent into the world
- Analyze multiple place data by storing.
- Additional filter may add for Analysis.
- Add extra feature to make the tool more user friendly.

5.5 Summary

In this chapter we have discussed about the outcome of our tool.We think that I am succeeded to build the tool which is very innovative to development world. I tried to give my best to do this project but we all knowthat each and every system has some limitations and I am not free from them. I have some limitation and I already discussed about it in the above. I wish to continue my involvement and contribution to this application for further development operation.

APPENDIX :: Source Code

[1] Source Code for index page :

```
<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="utf-8">

<meta http-equiv="X-UA-Compatible" content="IE=edge">

<meta name="viewport" content="width=device-width, initial-
scale=1">


<meta name="description" content="Twitter feed based on geo-
location ">

<title>Twitter Feed</title>

<link rel="icon" href="img/twitter.png">


<!-- Bootstrap -->

<link
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootst
rap.min.css" rel="stylesheet">


<!-- HTML5 shim and Respond.js for IE8 support of HTML5 elements
and media queries -->

<!-- WARNING: Respond.js doesn't work if you view the page via
file:// -->

<!--[if lt IE 9]>

<script
src="https://oss.maxcdn.com/html5shiv/3.7.2/html5shiv.min.js"></
script>

<script
src="https://oss.maxcdn.com/respond/1.4.2/respond.min.js"></scri
pt>

<![endif]-->


<link href="css/style.css" rel="stylesheet">

</head>
```

```
<body>
<div class="container">
<div class="row">
<div class="col-sm-12">
<h1>
<imgsrc="img/twitter.png" class="img-responsive center-block
logo" alt="Twitter Search" />
</h1>
</div>
</div>
<div class="row">
<div class="col-sm-12" id="map"></div>
</div>
<div class="row">
<div class="col-sm-12">
<form action="#" method="post" class="form-inline" role="form"
id="filter_form">

   <div class="form-group">
         <label class="sr-only" for="keyword">Keyword</label>
         <input type="text" class="form-control" name="keyword"
id="keyword" placeholder="Keyword">
   </div>

   <div class="form-group">
         <label class="sr-only" for="hashtag">Hashtag</label>
         <input type="text" class="form-control" name="hashtag"
id="hashtag" placeholder="#hashtag">
   </div>

   <div class="form-group">
         <label class="sr-only" for="radius">Radius</label>
         <input type="number" class="form-control" name="radius"
id="radius" placeholder="1KM" min="1" step="1">
   </div>
   <div class="form-group">
        <label class="sr-only" for="type">Sort</label>
        <select name="type" id="type" class="form-control">
<option value="recent">Show Recent</option>
<option value="popular">Show Popular</option>
</select>
   </div>

   <button type="submit" class="btnbtn-primary">Search</button>
</form>
</div>
</div>
<div class="row">
<div class="col-sm-12">
<div class="alert alert-info">Filter the tweets using the map
and form above.</div>
</div>
</div>
<div class="row">
<div class="col-sm-12">
<div id="twitter_results">
</div>
</div>
</div>
</div>
<footer class="container-fluid">
<div class="container">
<div class="row">
<div class="col-sm-12 text-center">
<p class="intro">
                            This Twitter search example was
developed as part of final semester project. I have implemented
<em>Twitter Search API</em> and <em>Google Map API</em> which
```

```
fetches public tweets within a radius from a selected latitude
and longitude. It is also possible to filter the tweets based on
keywords, hashtags and popularity. I have listed the first 100
results to reduce the request time and server load.

</p>

<p class="copyright">&copy; <?php echo date('Y'); ?>,
AminurRahman | <a
href="mailto:ar.polash1989@gmail.com">ar.polash1989@gmail.com</a
></p>

</div>

</div>

</div>

</footer>


<!--jQuery (necessary for Bootstrap's JavaScript plugins) -->

<script
src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.3/jquery.
min.js"></script>

<!-- Include all compiled plugins (below), or include individual
files as needed -->

<script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstra
p.min.js"></script>


<script type="text/javascript" src="js/script.js"></script>

<script type="text/javascript" src="js/gmap.js"></script>

<script
src="https://maps.googleapis.com/maps/api/js?key=AIzaSyAbG-
FpE28Pt73v5mbhrnim1_xZycAnnYI&callback=initMap" async
defer></script>

<script type="text/javascript" src="js/twitter.js"></script>

</body>

</html>
```

[2] JS Code for Twitter request :

```
$(document).ready(function(){
if(lat !== undefined &&lng !== undefined) {
requestTwitter();
    }
});

/**
 * Fetch the input values from the form and send request to
Twitter
 */
functionrequestTwitter() {
var key = $('input#keyword').val();
var hash = $('input#hashtag').val();
var radius = $('input#radius').val();
var type = $('select#type').val();

    /**
     * Show a loading message before the AJAX request starts
     */
    $('#twitter_results').html('<div class="alert alert-
warning">Loading tweets...</div>');
    $.ajax(
        {
url: 'inc/twitter.php',
data: {
                'lat'   :  lat,
                'lng'   :  lng,
                'key'   :  key,
                'hash'  : hash,
                'radius': radius,
                'type'  : type
            },
dataType: 'json',
method: 'GET',
success: function(response) {
                /**
                 * Request successful
                 */
if(response.statuses !== undefined &&response.statuses.length> 0) {
                    /**
                     * We have data. Empty the wrapper div and append each tweet.
                     */
                    $('#twitter_results').html('');
for(var i = 0; i <response.statuses.length; i++){
var item = '<div class="tweet row" id="tweed_' + response.statuses[i].id + '">';
                        item += '<div class="twitter_thumb col-xs-12 col-sm-1">' + '<a href="https://twitter.com/@' + response.statuses[i].user.screen_name + '" target="_blank" class="twitter_thumb_link"><imgsrc="' + response.statuses[i].user.profile_image_url + '" alt="' + response.statuses[i].user.name +'" class="img-responsive center-block" /></a>' + '</div>';
                        item += '<div class="tweet_text col-xs-12 col-sm-11">' + '<strong><a href="https://twitter.com/@' + response.statuses[i].user.screen_name + '" target="_blank" class="twitter_user">' + response.statuses[i].user.name + '</a></strong><span class="twitter_time">' + response.statuses[i].created_at + '</span><br />' + '<div class="tweet_text">' + twitterify(response.statuses[i].text) + '</div></div>';
item += '</div>';

                        $('#twitter_results').append(item);
                    }
                } else {
                    /**
                     * We got zero results.
                     */
                    $('#twitter_results').html('<div
class="alert alert-warning">Could not find any tweets! Try
expanding your search radius.</div>')
                }
            },
error: function(response) {
                /**
                 * Something went wrong!
                 */
                $('#twitter_results').html('<div class="alert
alert-error">Could not load results.</div>')
            }
        }
    )
}
```

[3] Twitter API request processing :

```
require_once('TwitterAPIExchange.php');
/**
 * Set key and secret for Twitter application.
 * We do not need oauth here because we shall not post anythign
to Twitter. We'll only access public tweets.
 */
$settings = array(
    'oauth_access_token' => "",
    'oauth_access_token_secret' => "",
    'consumer_key' => "BpbcXT8EOEJBMOWVPzNmrs1rw",
    'consumer_secret' =>
"FP4mXvzWo3ywx3KwS2g4ADojoGa7dhUMEGQ5vTymmz7YVbrBpk"
);

/**
 * Get the values from AJAX request.
 */
$lat = addslashes($_GET['lat']);
$lng = addslashes($_GET['lng']);
$key = addslashes($_GET['key']);
$hash = addslashes($_GET['hash']);
$radius = intval($_GET['radius']);
$type = addslashes($_GET['type']);

/**
 * Prepare the request URL
 */
$url = 'https://api.twitter.com/1.1/search/tweets.json';
$requestMethod = 'GET';

$getfield = '?q=';

if(!empty($key)) {
    $getfield .=urlencode($key);
}

if(!empty($hash)) {
    $getfield .= (!empty($key) ? urlencode(' ') : '') .
urlencode($hash);
}

if(!empty($lat) && !empty($lng)) {
    $getfield .= '&geocode=' . $lat . ',' . $lng . ',' .
($radius == 0 ?'1km' : $radius . 'km');
}

if(!empty($type)) {
    $getfield .= '&result_type=' . $type;
}

$getfield .= '&count=100';

/**
 * Send request using CURL
 */
$twitter = new TwitterAPIExchange($settings);
$response =  $twitter->setGetfield($getfield)
                     ->buildOauth($url, $requestMethod)
                     ->performRequest(true,
array(CURLOPT_SSL_VERIFYPEER => false));
/**
 * Print the response
 */
echo $response;
```

[4] JS Code for twitterify data View :

```
functiontwitterify(text) {
```

```
return text

    // URLS
        .replace(/(\b(https?|ftp|file):\/\/[-A-Z0-
9+&@#\/%?=~_|!:,.;]*[-A-Z0-9+&@#\/%=~_|])/ig,
            "<a href='$1' target='_blank'>$1</a>")

        // Hashtags
        .replace(/\B#([^ ]+)\b/ig,
            "<a href='http://twitter.com/#!/search?q=%23$1'
target='_blank'>#$1</a>")

        // Users
        .replace(/\B@([^ ]+)\b/ig,
            "<a href='http://twitter.com/#!/$1'
target='_blank'>@$1</a>");
}
```

[5] JS default value controller :

```
/**
 * Basic JavaScript controls for the application and default
values are handled here
 */
/**
 * Set default location to Dhaka.
 */
varlat = 23.8103;
varlng = 90.4125;

$(document).ready(function(){
    /**
     * Instead of regular form submit we should handle the
submit using JS and send Twitter request.
     */
    $('form#filter_form').on('submit', function(e){
```

```
e.preventDefault();
requestTwitter();
return false;
    })
});
```

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