

Mining Restaurants Information by Micro Blog Text Analysis

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Abstract—Micro-blogging is widely used nowadays. Most of the users normally write down their daily experience, feeling or emotion on their wall. This includes uploading photos of food they have taken. Some friends of this user might be interested in trying this food of which the photo has been uploaded by this user. However, it could be difficult for the friends to search that particular food on the Web as well as the exact location of the restaurant. In this paper, we provide a system that allows the users to search a particular food and produce the nearby restaurants on the Google Map. The proposed system will make the users to get the exact location of the restaurant easily.

Keywords—Food store searching, Google map, Micro-blogging, Cloud computing, Web Application

I. INTRODUCTION

With the swift development of Internet technology, people obtain the information more easily. Nowadays, the primary social networking service is micro-blogging. Sina Weibo is a Chinese version micro-blogging, which is very popular and operates successfully in China. This micro-blogging service has more than 500 million users. However, Twitter can be represented as the most successful micro-blogging service in this world. According to France Research Company, SemioCast, Twitter has more than 517 million users at June 2012 and 27% of the users are active users [1].

In the Twitter platform, a lot of users are willing to share their experience, write posts on their life, upload their pictures, etc. This includes uploading the gourmet's pictures or writing its information as a post (also known as tweets) on the user's timeline or wall. However, users are usually just uploading the gourmet's image or writing gourmet's name as a post without writing down the exact address of the restaurant. So, it is difficult for other people to find the exact restaurant easily. If users want to get the exact address of a particular restaurant, they will

face two problems. Firstly, they need to inquire the restaurant address to the person who has uploaded the images or written the post that contains gourmet's name, in order to get the address of the restaurant by leaving the comment to the post or writing a direct message to the original poster. It usually consumes some time for the original poster to reply back to the users who have asked. The second problem the users will face is that although they obtain the exact address of the restaurant, the restaurant can be too far from their current location. Consequently, the users will just give up since it is too hard for them to reach the restaurant. These overall processes to search the exact location have wasted a lot of the user's time and energy.

Google Maps is a Web based map service application provided by Google. There are many map related services powered by Google, including the Google Maps website, Google Ride Finder, Google Street View, etc [2]. Google also has provided the Google Maps API.

Therefore, to solve these problems, in this paper, we have provided a Web application platform which involves Google Maps service. The main functions of our application are shown as below:

- Extract the post from other users which contain the food name or food image.
- Twitter user can click on the image or the name of the food and this application will provide the exact restaurant's address on the Google Maps.
- This web application also provides the feedbacks on the food for individual restaurant that are provided from Google Maps.

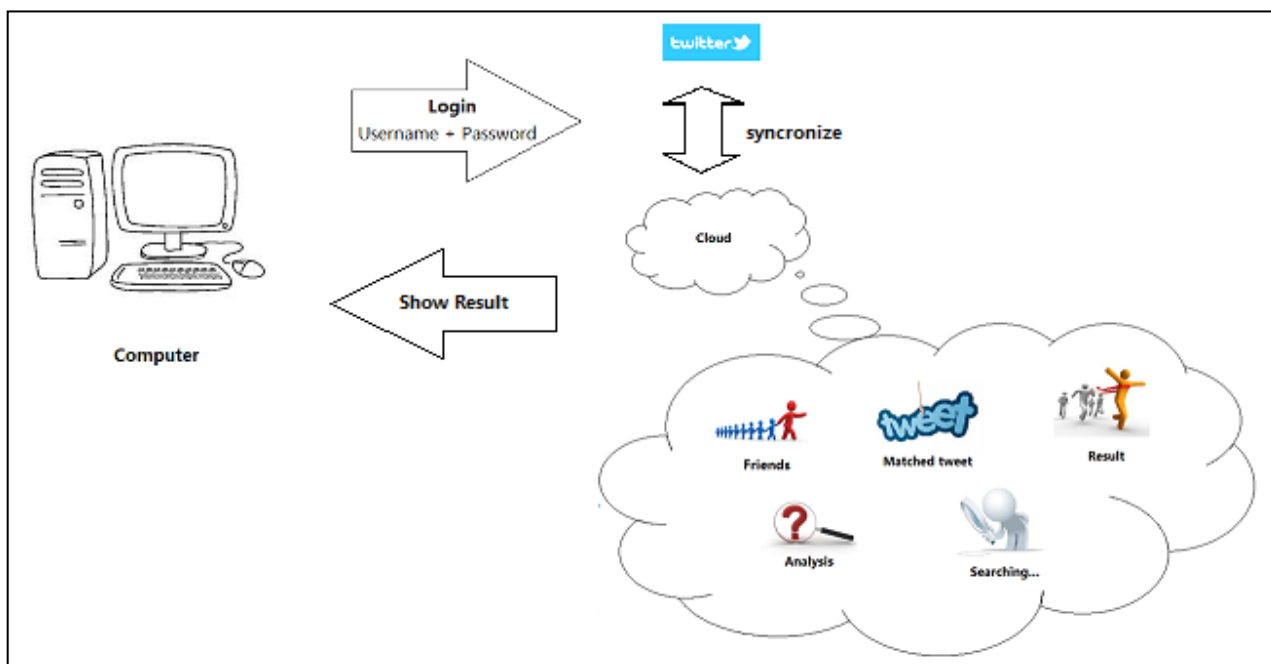


Figure 1. Basic Idea

- Twitter user can also rate the restaurant through our application.
- Twitter user can give the feedback through our proposed application.
- The restaurant owners can link to our web application and suggest famous foods in their restaurants to the users.

The web application proposed in this paper has fulfilled the demand of the Twitter user in order to locate the wanted cuisine easily and it also provides business opportunities to those food restaurant owners.

The rest of the paper is organized as follows: in Section II, we describe more about the Twitter platform and also the Google Maps. In Section III, we explain our proposal, the basic idea, flow chart, and the system architecture of this paper. We conclude everything in Section IV.

II. TWITTER AND GOOGLE MAPS

A. Twitter

Twitter is a social networking and micro-blogging services. Twitter's slogan is "Share and discover what's happening right now, anywhere in the world!" Twitter uses wireless networks, landline networks, and other communication technologies to do instant messaging, which are typical applications

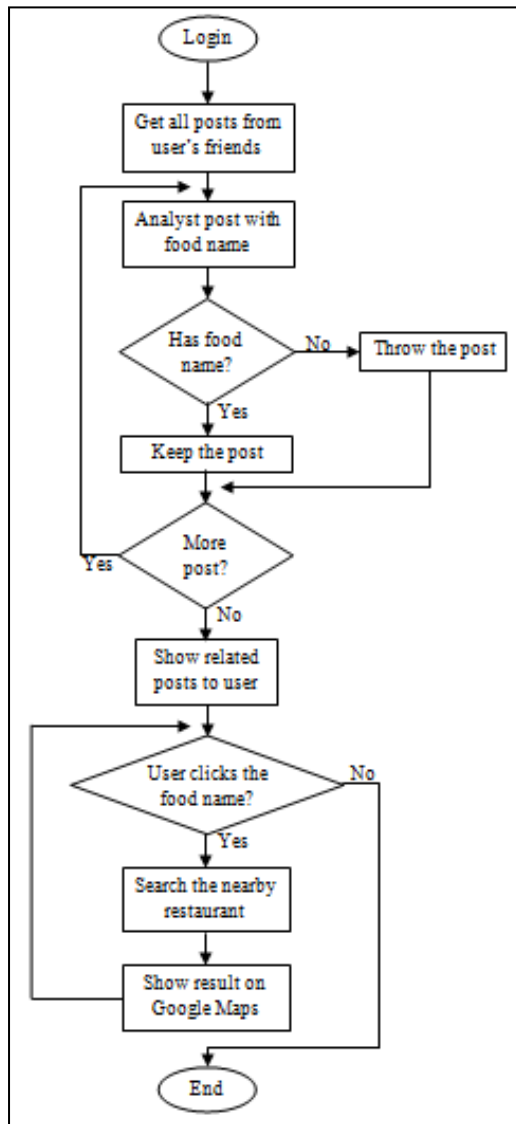
for micro-blog. It also allows users to own the latest developments and ideas in the form of text messages sent to mobile phones and personalized Website groups, rather than sent to an individual. In 2006, a pioneer and blogger.com founder, Evan Williams, created a new company, Obvious, and launched micro-blogging services. Initially, this service is only for phones to send text messages to friends. As of February 2012, Twitter has said that they have the ability to implement the network content filtering for different countries and regions, in order to speed up the pace of Twitter to the world.

Twitter API can use Web Intents to provide API function. Web Intents (<http://www.webintents.org>) is a framework for client-side service discovery and inter-application communication. Web Intents provide popup-optimized flows for working with Tweets & Twitter users: Tweet, Reply, Retweet, Favorites, and Follow. They make it possible for users to interact with Twitter contents in the context of your site, without leaving the page or having to authorize a new app just for the interaction. Web intents are mobile friendly, and easy to implement.

B. Google Maps

Google Maps is a web mapping service application and technology provided by Google.

Figure 2. Flow Chart



Google Maps provides satellite photos with local details. Administrative Region services of Google Maps can provide business information and traffic as well as vector maps, satellite images in different resolutions and can display the terrain and contour terrain view. The operations of Google Maps are simple and convenient in various types of platform application. As of June 20, 2005, Google Maps has covered the original United States, Britain and Canada, and its coverage has been expanded globally. As of January 29, 2013, Google Maps has updated itself to include all the countries [3] in the planet.

Google also provides Google Maps API. Google Maps API is a map programming API which is open to all developers. It entails the developers' effort to build their own map service. Google Maps can map data so that they can be embedded into developers' websites directly. It also can provide location-based services to the users. The most important thing for Google Maps API is that it is a free service. Any non-profit website can use it freely.

III. OUR PROPOSAL

A. Basic Idea

This basic idea is shown as Figure 1. The users have to login with their Twitter accounts through a cloud system. After that, the cloud will get synchronized with Twitter website. Then, this cloud will use the Twitter API to get the list of users' friends (i.e. "following") and analyse these friends' posts. Through these posts, our system in the cloud tries to recognize the food or cuisine name. The cloud will then keep the post that does contain the food name from the text and throw away the post that does not contain any food names. After that, it will show these results to the user and the user could click the food name from that particular post. If user has clicked on the food name on the post, then the cloud will search the nearby food store that will sell the particular food and these stores will be shown on the Google Maps. The user can click the view point that shows on the Google Maps to get the exact address and also to obtain the feedback of that particular food. Figure 2 has shown the flow chart of this idea.

B. System Architecture

The application in this paper consists of 3 layers: *Front Layer*, *Middle Layer* and *Last Layer*. These layers play different roles in our application and it is also shown in Figure 3.

Front Layer: This layer provides information to the users. The example is the user interface that request users to login with their Twitter accounts. Besides that, this layer also provides the posts that contains the food's name or food's image and also shows the shop as a result on the Google Maps.

Middle Layer: This layer performs certain tasks that cannot be observed by users or developers.

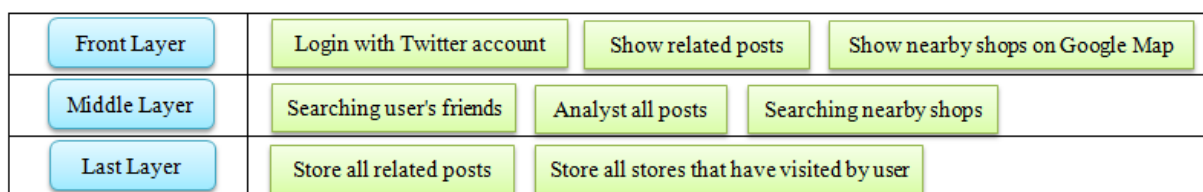


Figure 3. System Architecture of Web Application

This layer searches the user's friends through Twitter API, analyses all the posts that related with the food and tries to extend the searching process to obtain the nearby shop.

Last Layer: This layer maintains databases. This layer is responsible for storing all related posts and also the stores that have been visited by the users. This layer plays an import role because it can take a lot of time for the processing of search related posts. If we store those related posts into database, the system can commence to analyse those latest posts to process them. The history of users' visits for the restaurant is used to allow the users to review which shops they have visited. Then the users can forward or re-visit on this restaurant easily.

IV.CONCLUSION

In this paper, we proposed and discuss the design of the Web application on searching nearby food stores by clicking the food name from the post (also known as tweets) that is shown in the Twitter. This Web application is more user-friendly to the user to get the food stores easily without searching manually through the Websites. We explain the basic ideas, flow chart and system architecture of our Web application. However, we still have various research and development directions to conduct in the future, such as connecting with Google to get the exact food stores and connecting with the Google Maps API to show the food stores on the Google Maps.

For instance, one of our future work is to find the related posts which are not only for food or cuisine area, but also includes the items that are sold in the online shops such as clothes, shoes, stationery, etc. As for GUI of the proposed system, it is interesting to consider the function that, when the user tries to hover this item's name on the post, the system will show the image to the user so that the user knows what the exact items look like. Furthermore, this application will try to link with other Web services

such as www.groupon.com. Hence, the user can have the cheapest price for that particular item.

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