Twitter Accounts Recommendation Based on Followers and Lists

Wit Krutkam[1], Kanda Runapongsa Saikeaw[2], Arnut Chaosakul[3]

Department of Computer Engineering, Khon Kaen University

123, Mittraparb Road, Muang District Khon Kaen 40002 Thailand

`wit.krutkam@gmail.com`[1]

`krunapon@kku.ac.th`[2]

`arnut@kku.ac.th`[3]

Abstract— **Keeping up with news and information through social media, especially Twitter has been increasingly growing rapidly. This paper studies and analyzes the use of followers and list features of Twitter accounts as recommendation. Typically, people just look at the number of followers as a factor to decide which Twitter account to follow. However, using the number of followers sometimes can also satisfy the need to find out whom to follow because the list groups people who share the same interest or demography. This paper presents and analyzes the evaluation of using the number of followers and the lists of Twitter accounts as ranking criteria. The experimental results show that people tend to use the number of followers more than the number of lists.**

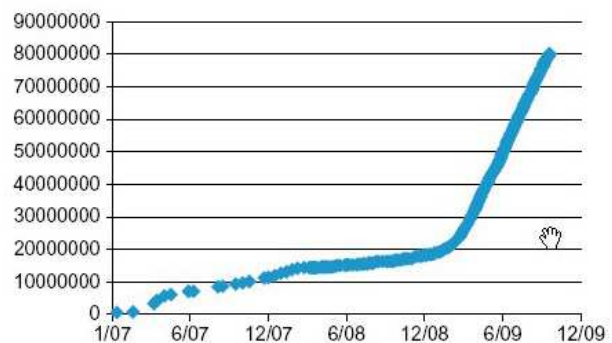*Keywords*— **Social Media, Twitter, Ranking, Twitter Accounts Recommendation**

Fig. 1 Estimated growth of Twitter. The growth curve shows sharp increase in March 2007 (The foundation and April 2009 After subscribe by Politician, Celebrity and Newsperson) [4]

Blog	Twitter
Subscribers	Followers
Subscriptions	Friends
Posts	Tweets

Fig. 2 A comparison between Blog and Twitter functionality and Terminology

I. INTRODUCTION

We live in the era of network, especially Social Network. Nowadays we spend more times on Social Media sites much more than in the past. We consume the information, communicate with our friends and share knowledge with others via the Application call Social Media tools such as Facebook, Hi5, Orkut, LinkedIn, and Twitter. In this study we focus on 'Twitter' which is categorized in Microblogging [1] among Social Media tools.

The growth chart in Figure 1 shows a large increase in user accounts in March 2007 (corresponding to the foundation) and April 2009 (showing the mass media affect by politicians, celebrities and Newsperson)[2]. If we look at the right-hand side of Figure 1, we find that the growth has increased dramatically. Twitter can be thought of as a conversational microblog like bloggers, Twitter users post message that show up in the stream of all the people are subscribed to them. Twitter's infrastructure in this way mirrors the functionality of RSS (Really Simple Syndication) feeds [3].

Twitter calls people who subscribe to and receive your messages as your 'followers' or the people who are following you . On the contrary, the people whom you are 'following' are called 'friends'. These terms 'friends' correspond with subscribers and subscriptions, respectively, in the context of blogs. Figure 2 shows several features that may be familiar to user of blogs and the Twitter equivalents.

One significant difference between blog and Twitter is the size of the message – the characteristic that puts Twitter in micro blog. Twitter messages are limited to 140 characters. The reason for this restriction is that Twitter is designed to be used via SMS (Text message) on a mobile phone (each SMS message is limited to 160 characters).

These short messages are called – 'tweets'. And when the short messages are forwarded by others Twitter user, we call such messages as –'retweets'.

As we enter into the Twitter world, our first question is likely to be "whom should we follow?" If we follow too many accounts, there will be too many messages that we subscribe via our timeline. If we follow too few accounts, there will be some important and interesting information that we will miss. Thus, we actually may want to follow accounts that are more important than others. Who does usually provide useful and interesting content? Normally, people just look at the number of followers as a criterion to decide which account to follow. However, using the number of followers sometimes can also satisfy the need to find out whom to follow because the list groups people who share the same interest or demography. Figure 3 shows its most prominent contents of Twitter which is a stream of tweet and dash board with user specific information
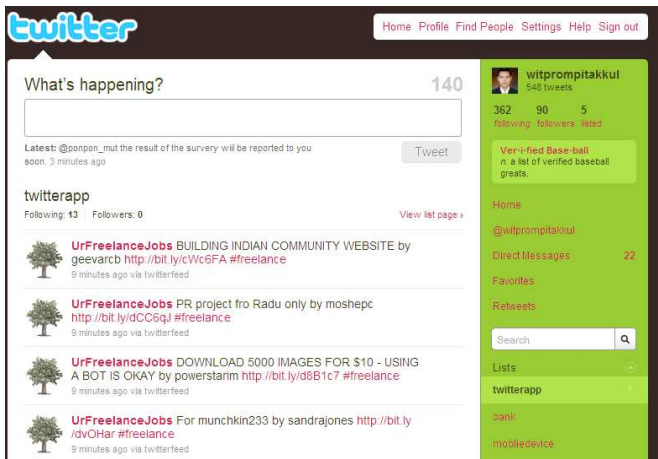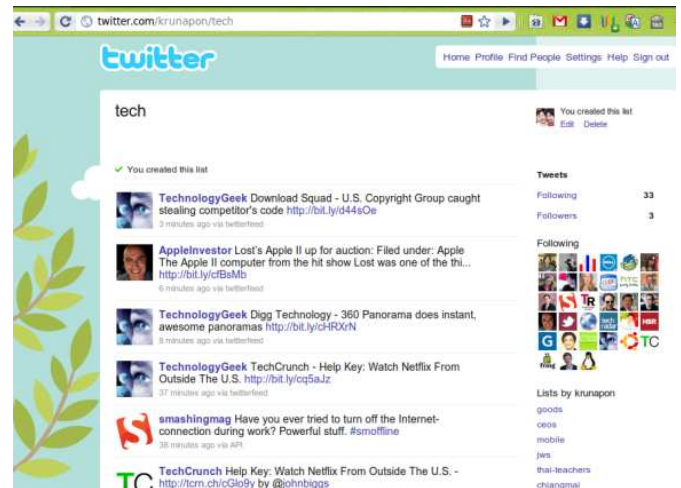
Figure 3 Twitter's web based interface

In October 2009 Twitter has introduced new specific information on user profiles call list. The Twitter list feature is a new way to organize the people you are following on Twitter, or find new people. Actually, Twitter lists are Twitter's long awaited "groups" feature. It offers a way bunch together other users on Twitter into groups so that we can get an overview of what they are up to. Lists are not just static listings of users, but rather accumulated Twitter streams of the latest tweets from a specified set of users.

In other words, Twitter gives us an opportunity to create a list that groups together people for whatever reason (the members of your family, for example), and then you can get a snapshot of the things those users are saying by viewing that list's page, which includes a complete tweet stream for everyone on the list. Lists allow you to organize the people you are following into groups and even allow you to include people you are not following. A list 'tech' of Twitter user 'krunapon' is shown in Figure 5.

Figure 4 shows a Twitter account profile which shows the numbers of people whom you follow (following), the number of people who follow you (followers), and the number of lists that the account is in (listed). This paper studies and compares the use of followers and listed as indicators for recommending whom to follow.

Fig.4 A sample Twitter profile

Fig.5 Sample list @krunapon/tech

The remainder of the paper is as follows. Related work is discussed in Section II.   We then explain research methodology Section III. Next, we present experiment results in Section IV. Finally, we conclude and talk about future works in Section V.

II. RELATED WORK

In the study of Haewoon Kwak, Changhyun Lee, Hosung Park, and Sue Moon [5], they crawled the entire Twitter site and obtained 41.7 million user profiles, 1.47 billion social relations, 4.262 trending topics, and 106 million tweets. In order to identify influentials on Twitter, they have ranked users by the number of followers and PageRank and found two rankings to be similar. At that period of their experiment, Twitter had not deployed the Listed Feature so they did not study on Ranking by listed. To the best of their knowledge, their work is the first quantitative study on the entire Twittersphere and information diffusion on it

III. RESEARCH METHODOLOGY

We conduct this research by first develop the system to get the information about Twitter accounts which will result in three lists ranked by different criterion. Then we create the survey which asks Twitter users to vote which list is the best one.

A. System Development

We develop our system that calls Twitter API (Application Programming Interface)[6]   to display lists that a Twitter account is in, members of a given list, and subscribers of a given list. We then exploit the use of the available Twitter API for our system development.
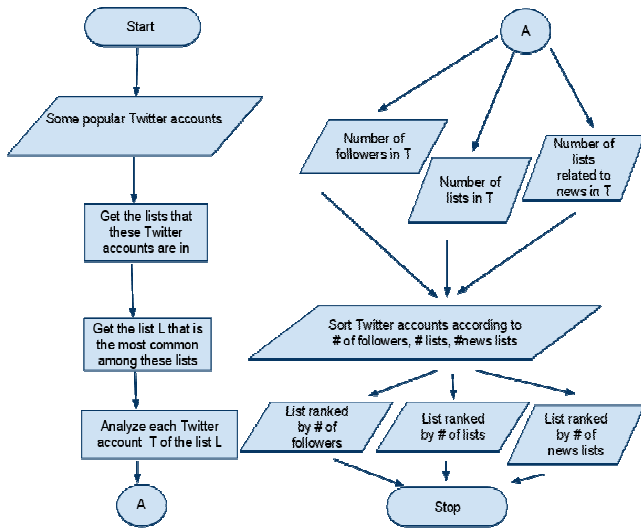
Fig. 6 Conceptual system design

From Figure 6, there are these following steps:

1) Get the popular Twitter accounts in an area that we are interested in. We obtain this information by asking Twitter users about the accounts that they follow and looking at the profiles of those Twitter accounts.

2) Get the lists that these popular accounts are in. We obtain this information by writing a program to call method *http://api.twitter.com/1/$user/lists/memberships.json* which will display the lists that the Twitter account $user are in using format JSON. Then get the list that all of these members are in.

3) Analyze each member of the list that includes all popular Twitter account. Specifically, we get the information about the number of followers, the number of lists, and the number of lists are related to the expertise area that we are interested in (here is the field "news") by calling the method *http://api.twitter.com/1/$user/lists/memberships.json* which will return the result that includes the number of followers and calling the method
http://api.twitter.com/1/$user/lists/memberships.json to find out about the lists that the $user is in and then check whether this list is related to news and count the total lists and the number of lists related to news.

4) Sort three lists of the Twitter accounts according to the number of followers, the number of all lists, and the number of all lists that are related to news.

5) Tweet the members and the subscribers of the list to ask their opinions about which list of these three lists are the best. We get the information about the subscribers of the list by using the method
http://api.twitter.com/1/$user/$list/subscribers.json and tweeting by calling method
http://api.twitter.com/1/statuses/update.json

B. Survey Page

In order to evaluate this study, we have created an online survey to ask the opinion of the newsperson about what is the best ranking in their opinion as shown in Figure 7.

Fig. 7 Thai news list evaluation survey

In the survey shows in Figure 7 , there are three questions

1) Which list you think it's the best ranking for getting news? The user will choose only one list from three lists which include the list ranked by the number of followers, the list ranked by the number of all lists, and the list ranked by the number of news list.

2) Are you a newsperson? We are interested to know whether the opinion from people who are in the field will be different from that of people who are not in the field.

3) How often do you access Twitter per day? We want to know whether the level of activeness of accessing Twitter will have an influence on the decision of the ranking criteria.

IV. EXPERIMENTAL RESULTS

In this paper, we choose to focus on the Twitter accounts that provide news resources in Thailand because a significant number of newsperson provide news via Twitter and many Thai people keep up with news via Twitter applications on their mobile phones.

Examples of widely accepted Twitter accounts are such as @suthichai, @noppatjak, and @nattha_tvthai.   From our experiment, it is found out that the list @top10thai/news is the list that includes all 161 public accounts and that has the highest subscribed members as 409 subscribers.

A. Ranking

Lists ranked by the number of followers, the number of all public lists, and the number of news lists are partially shown in Figure 8. The total number of accounts is 161.

Ranking	Rank by #follower	Rank by public Listed	Rank by News Listed
1	suthichai	suthichai	suthichai
2	thenation	js100radio	js100radio
3	js100radio	noppatjak	noppatjak
4	Kitti3Miti	Kitti3Miti	ThaiShortNews
5	panraphee	ThaiShortNews	ktnews
6	ktnews	Nattha_tvthai	Nattha_tvthai
7	noppatjak	ktnews	Kitti3Miti
8	ThaiShortNews	panraphee	Kom_chad_luek
9	kuk_krittika	nationnews	news1005fm
10	Nattha_tvthai	NationChannel24	nationnews
11	thapanee3miti	Kom_chad_luek	NationChannel24
12	nationnews	news1005fm	BPbreakingnews
13	ThaiPBS	tulsathit	MatichonOnline
14	NationChannel24	BPbreakingnews	thapanee3miti
15	BBTVChannel7	thapanee3miti	jin_nation
16	nudsikan	thenation	panraphee
17	Kom_chad_luek	jomquan	jomquan
18	news1005fm	BBTVChannel7	satien_nna
19	KhunPleum	MatichonOnline	tulsathit
20	Voice_TV	jin_nation	BBTVChannel7
21	thaipost	KhunPleum	thaipost
22	top10thai	satien_nna	can_nw
23	jomquan	ariptoday	thenation
24	Neaw_NBC	can_nw	prachatai
25	teera_ntv	thaipost	top10thai
26	jin_nation	top10thai	teera_ntv
27	tulsathit	prachatai	Voice_TV
28	MatichonOnline	Voice_TV	ASTVmanager
29	can_nw	teera_ntv	wannasiri_tv

Fig. 8 Show the results of the experiment

The number one in all lists is @suthichai who has the highest number of followers, the highest number of all lists, and the highest number of news lists. Based on a detailed observation, notice that the ranking from number one to number ten is not significantly different in all these three lists. However, there is some distinguished result of these lists. For example, @jin_nation, is ranked in number 27 if rank by the number of followers , but ranked in number 20 in the list based on the number of all public lists and ranked higher in number 15 in the list based on the number of news lists. Based on this observation, it can imply that news lists can indicate the field that Twitter user has expertise even if that user may not have significant number of followers.

B. Survey Results

The sample group who participated in this survey is selected from the members and subscribers of @top10thai/news which we consider as people who are intersted in press media journal and news. From Figure 9, it is shown that 61.5% of users think the best list as the list ranked by number of followers, 33.73% consider the best list as the list ranked by the number of news lists and only 4.81% chooses the best list as the list ranked by the number of all list.

Remind that people in the all of these three lists are all newsperson. Thus, all people in the list will actually be listed in the news area and thus the only their distinguish feature is the number of followers. That is why people like the list ranked by the number of followers more than the list ranked by the number of news lists or the number of lists.
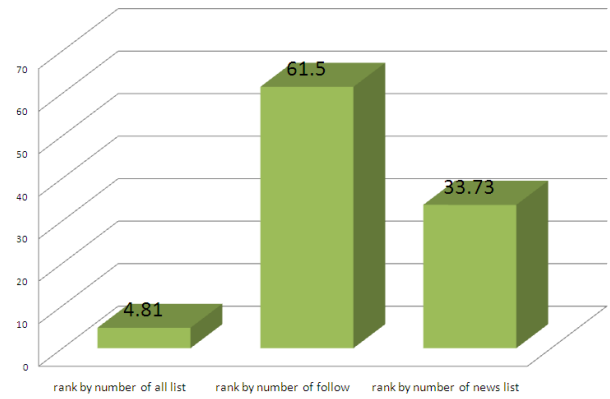

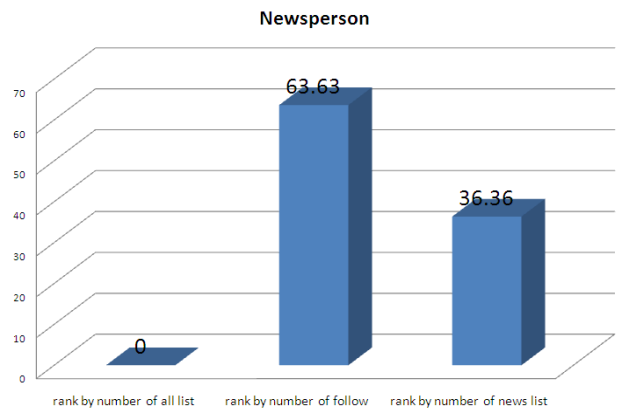Fig. 9 Vote results on lists that are the best

Fig. 10 Vote results by newsperson

Figure 10 shows the vote results by newsperson (users with expertise). It is shown the 63.63% of newsperson think that the best list as the list ranked by number of follower, 36.36% consider that the best list as the list ranked by number of news list and 0% of newsperson think that the best list as the list ranked by all lists.
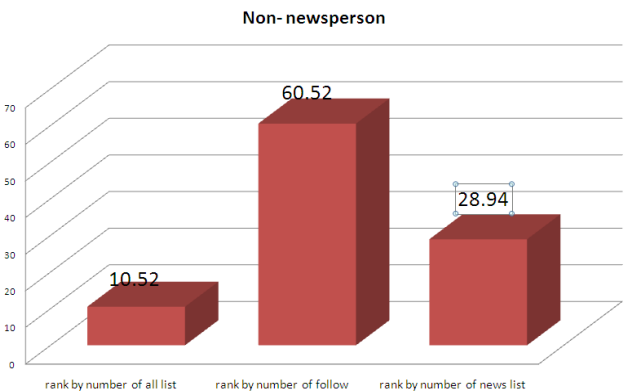

Fig. 11 Vote results by non-newsperson

Figure 11 illustrates that the vote results by non-newsperson. 60.52% of non-newsperson vote the list ranked by number of follower as the best, 28.94% the list ranked by the number of news list as the best and 10.52% think that the list ranked by the number of all lists is the best.

Comparing the vote results by newsperson and non-newsperson, we can learn that newsperson do not value the ranking based on the number of lists that a given Twitter account is in. On the other hand, newsperson recognizes the importance of the number of news lists that the Twitter account is in more than non-newsperson.
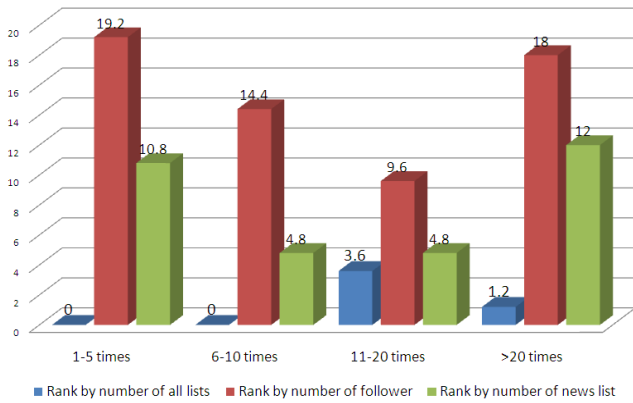

Fig. 12 Vote results on the view of different Twitter usage frequencies

From Figure 12 we studied on how being active on Twitter affects the selection of the ranking criteria. In this figure, we can conclude that all groups of Twitter users choose the list ranked by the number of followers. Nevertheless, for people who often access Twitter considerably give the weight of the significance of lists based on expertise more than Twitter users who are less active.

V. Conclusions

Twitter is the largest microblog site worldwide. From our study, we find that users consider both the number of followers and the number of lists based on expertise as a criteria to subscribe the content (tweets) they are satisfy. However, non-expert users in the field tend to look at the number of followers more than the number of lists based on expertise. On the other hand, compared to non-experts, more experts realize the use of lists in their field as more effective criterion.

Scope of The Future Work

In the future, we would like to do the experiments also on general Twitter accounts rather than only on Twitter accounts in a given area. We also are interested to look at other information of Twitter accounts, such as the content of tweet and retweet messages to consider in answering the question whom to follow.

Acknowledgment

The authors are grateful to the referees for their suggestions and useful comments.

References

[1] Wikimedia Foundation, Inc. "*Microblogging*" .[Online] Available from http://en.wikipedia.org/wiki/Microblogging, cited 2010 July 30.

[2] Derek Hansen, Ben Sheinderman ,Marc A. Smith, "*Analyzing Social Media Networks with NodeXL Insigth from a Connected World*", Morgan Kaufmann is an imprint of Elsevier30 Corporate Drive, Suite 400, Burlington, MA 01803, USA pp 145-149 , 2010.

[3] Wikimedia Foundation, Inc. "*RSS*" .[Online] Available from http://en.wikipedia.org/wiki/Rss cited 2010 July 30.

[4] Derek Hansen, Ben Sheinderman ,Marc A. Smith, "*Analyzing Social Media Networks with NodeXL Insigth from a Connected World*", Morgan Kaufmann is an imprint of Elsevier30 Corporate Drive, Suite 400, Burlington, MA 01803, USA pp 145-149 , 2010.

[5] Haewoon Kwak, Changhyun Lee, Hosung Park , Sue Moon. "*What is Twitter, a Social Network or a News Media?*" International Word Wide Web Conference Comittee (IW3C2).WWW2010 ,Raleigh, Nort Caralina USA. April 26-30 ,2010.

[6] Twitter, Inc. "*API Document*". [Online] Available from http://dev.twitter.com/doc,cited 2010 July 30.

.