

# SNS model for providing social network channels through queries

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**Abstract:** Users can obtain the information through a basic web searching and find the answer to the questions directly, but maybe the expected answer does not exist. Besides, we do not know the update of new information in time. The online social networking services spread quickly and store many user data, but these data are worth less and may be unreliable answer to users' questions. Users can obtain the simple answer but can not expect more additional information in knowledge question-answering (QA) system. In this paper, we design the system with the advantages of knowledge QA system, web searching and characteristics of social networking service for providing social network channel based on the query and answer without users' contact network. The user can obtain real-time answers by the user network interested in users' queries through the network channel of this system, get the additional information effectively and share it with others in the social network channel in this system.

**Key words:** social networking service (SNS); model; query; search; communication channel

**CLD number:** TP393

**Document code:** A

**Article ID:** 1674-8042(2012)02-0173-06

**doi:** 10.3969/j.issn.1674-8042.2012.02.015

The recent typical social networking service (SNS) includes Twitter, Facebook and LinkedIn that emphasize the networking between users, and the typical knowledge question-answering (QA) system are Google Knol, Yahoo Answer and Naver Kin<sup>[1]</sup>.

If users want to share information on his own network, by using SNS, it can be more effective than other services. But user's gathering and sharing information are obtained on web portal service or blog services, and user's questions are usually submitted on knowledge QA system because of the characteristics of SNS.

SNS focuses on the sharing information based on time-line and messages, but it does not support the system of communication with experts on each major field and gathering knowledge<sup>[2]</sup>.

We build a SNS model providing social network channel through queries asked by users for solving these problems. This model effectively amalgamates advantages of SNS and knowledge QA system by enabling the subscription, update and feedback in QA structure in SNS style. The idea is simple.

The construction of this paper is as follows. First, we explain SNS and knowledge QA system, and discuss merits and demerits of them in section 2. Also we explain whole system and main modules in section 3. There is a detailed analysis of the model we suggested in section 4. Finally, we finish this research after explaining needs, meaning and limitations

of this model in section 5.

## 1 Background

### 1.1 Knowledge QA system

The knowledge QA system and web portal services are created to gather and share information. These services represented by blog, web portal and QA have limitations of the quality and quantity of information that can be obtained by users in subject and scale of each service.

Commonly, the knowledge QA service operates exclusively to gather and share information of certain subject. So information collected by QA service is more reliable than by simple web searching.

But because knowledge QA service gather and share information with unspecified individuals on network, the user who cannot obtain the answer on one of QA services must join other services for the same subject. This happens repeatedly until there is a person who knows about users' questions in users' network. But the dispersion of individual private information through joining many networks causes security problems and inconsistency of personal information.

It has the limitation by excessive motive of the clear composition and low scalability<sup>[3]</sup>.

\* Received data: 2011-09-21

**Foundation item:** Industrial Strategic Technology Development Program, Development of a Cognitive Planning and Learning Model for Mobile Platforms (No. 10035348) funded by MKE (the Ministry of Knowledge Economy), Korea

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## 1.2 SNS

SNS represented by Twitter and Facebook is intended for networking and communicating between users. And it enables gathering more reliable data than web searching through requesting information to users in network<sup>[5]</sup>. Besides, SNS provides fast feedback and spreads about information of many majorities because there is the diversity of hobbies and interests in SNS.

But the distinctive feature of SNS is scattering information and individual activities<sup>[4]</sup>. Users share interesting news quickly, re-share the others' shared information or spread data out with additional comments. As many more users share their own routine life episodes or funny gossips, users should put efforts into finding information that user wants among massive contents in SNS.

The access to old information is harder and harder with flowing time-line regardless of usefulness of information.

## 2 System structure

### 2.1 System structure

We build a social network channel model that enables users' requested queries to construct channel and enables plentiful answers and discussions in SNS communication style.

Fig.1 shows structure of main system. The whole system consists of three main modules.

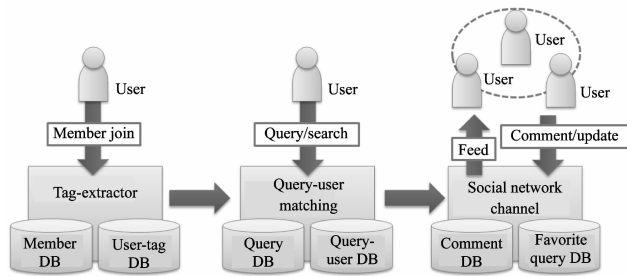


Fig. 1 System structure

#### 1) Tag-extractor

In the process of joining the system, tag-extractor automatically connects to SNS system in which users already exist for analyzing user's posted articles, so user's interests can be automatically extracted from those tags. Of course, users can directly add their own interested tags.

#### 2) Query-user matching

Comparing with user's entered questions and other user's interested tags, we can extract people who are interested in this question, and pass on this information to social network channel through query.

#### 3) Social network channel through query

Using question-user relation we construct social

network channel and the user who is the character of the social network can receive the feed via user interface. If a new channel is created or new answer is committed, the system can update in real time.

Social network channel model consists of a tag-extractor module(Fig.2), a query-user matching module, a social network channel generating module and the user. The system will analyze the existing posts and extract tags user might be interested in when people become the member of this system. When a user posts a question on system, the question-user matching module will make a channel with other members who have the same or associated tags. After creating a channel there will be a virtual space to discuss on the topic which is already posted.

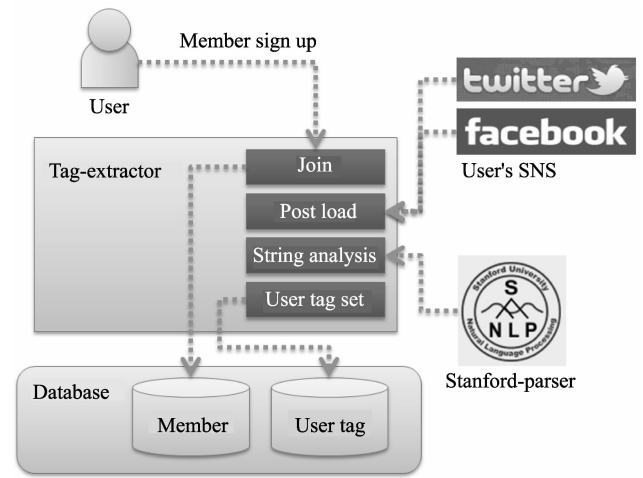


Fig. 2 Structure of tag extractor

### 2.2 Tag-extractor

Fig.3 describes the process of extracting associated tags through the post in SNS.

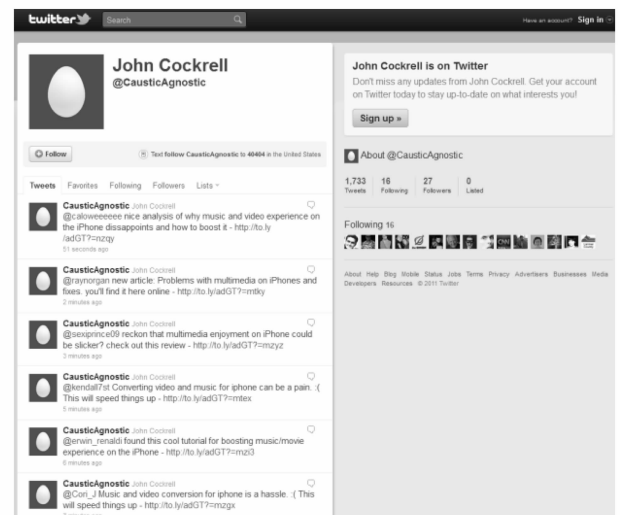


Fig. 3 SNS posts of user

Through the process of joining the system, users

link with their SNS such as Facebook, Twitter to the system. For Twitter as example, the posts are show in Fig. 3.

Tag-extractor module collects texts from SNS which are posted on web service. We use “Stanford parser” to determine noun keywords from countless words. The extracted keywords which are from the collected texts are shown in Fig. 4.

| N. | Post   | Extracted Keyword                                 |
|----|--|---|
| 1  | @caloweeee nice analysis of why music and video experience on the iPhone disappoints and how to boost it - <a href="http://to.ly/adGT7=mszy">http://to.ly/adGT7=mszy</a> | Music video experience iphone                     |
| 2  | @raymorgan new article: Problems with multimedia on iPhones and fixes, you'll find it here online - <a href="http://to.ly/adGT7=mtly">http://to.ly/adGT7=mtly</a>        | Article problem multimedia iphone online          |
| 3  | @sejprince09 reckon that multimedia enjoyment on iPhone could be slicker? check out this review - <a href="http://to.ly/adGT7=mspe">http://to.ly/adGT7=mspe</a>          | Reckon multimedia enjoyment iphone slicker review |
| 4  | @kandall7t Converting video and music for iPhone can be a pain. :( This will speed things up - <a href="http://to.ly/adGT7=mtex">http://to.ly/adGT7=mtex</a>             | Video music iphone pain speed                     |
| 5  | @erin_renaldi found this cool tutorial for boosting music/movie experience on the iPhone - <a href="http://to.ly/adGT7=mtm2">http://to.ly/adGT7=mtm2</a>                 | Tutorial music movie experience iphone            |
| 6  | @PictureMeBroke Having to convert music and video for iPhone isn't fun. :( But there's a fix - <a href="http://to.ly/adGT7=mdex">http://to.ly/adGT7=mdex</a>             | Convert music video iphone                        |
| 7  | @g3ehh found this useful tutorial for improving multimedia enjoyment on the iPhone - <a href="http://to.ly/adGT7=mtm3">http://to.ly/adGT7=mtm3</a>                       | Tutorial multimedia enjoyment iphone              |
| 8  | @theBetsy800 iPhone's got an awesome display! Use it to watch videos the easy way! - <a href="http://to.ly/adGT7=mtm2">http://to.ly/adGT7=mtm2</a>                       | Iphone display video way                          |
| 9  | @gagagagagag thinking that video experience on iPhone could be better? have a look at this review - <a href="http://to.ly/adGT7=mtm4">http://to.ly/adGT7=mtm4</a>        | Thinking video experience iphone review           |
| 10 | @l_applifaz new "The true state of Multimedia on iPhones and what to do about it" - boosting music usability - <a href="http://to.ly">http://to.ly</a>                   | Multimedia iphone state music usability           |

Fig. 4 Post analysis of user

The system will predict keywords which user might be interested in and sorted by the frequency of word appearing in the text.

### 2.3 Query-user matching

Fig. 5 shows the structure of the query-user matching module.

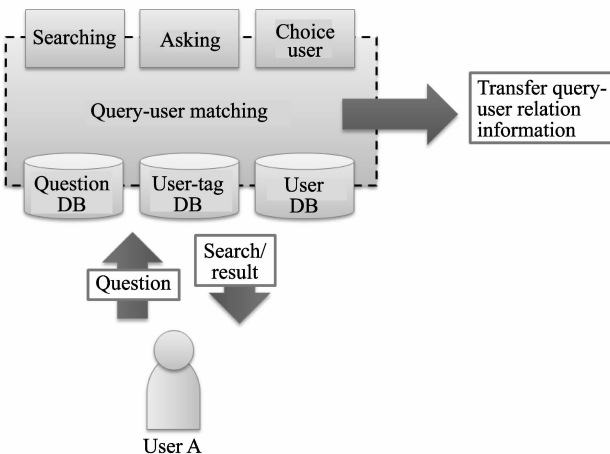


Fig. 5 Structure of query-user matching

Query-user matching module consists of six main components.

- 1) Searching: search for similar questions and answers. It plays a role of basic knowledge searching.
- 2) Asking: register question to server.
- 3) Choice user: extract tags from posted questions and matches them with that of other users who have the same tags.

4) Question-DB: save the user's registered questions.

5) User-tag DB: save the keywords which user selected.

6) User-DB: stores user's basic information.

Users can register questions while searching for answers from the system. The answers include the basic answers which are stored in web database and the others from other user's through the social network channel by using question-user matching module. This system extracts keywords from resisted questions and then compares them with the existing tags. After that, the keywords and tags will build the relationship between members of users; also this basic information will be stored. For more elaborate recommendation, it will consider not only user interests but also closeness and association of user, and will recommend the existed channel, tag and messages<sup>[6,7]</sup>.

### 2.4 Social network channel

Fig. 6 shows structure of social network channel generating module.

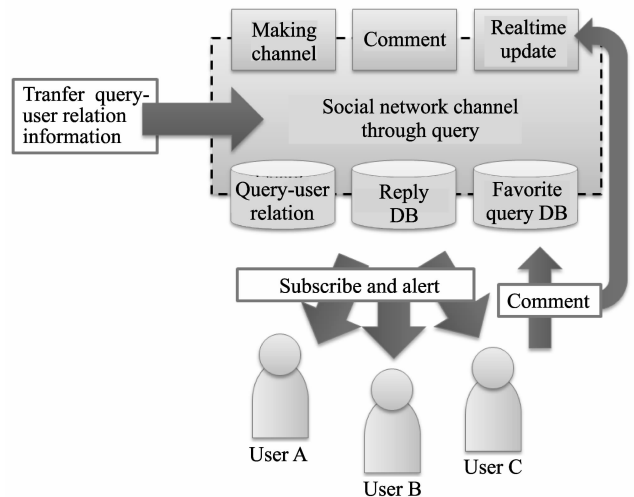


Fig. 6 Structure of social network channel

Social network channel generating module consists of six main components.

- 1) Making channel: it configures the channel through the query to provide the interface which creates a new social network channel to the user.
- 2) Comment: it provides registered answer interface and calls real-time update function.
- 3) Real-time update: along with the comment, as the answer registers in system, the channel will update the feed to the member of the channel.
- 4) Query-user relation: it stores the relationship between users and queries.
- 5) Reply DB: it saves the answer.
- 6) Favorite query DB: it stores information about

queries which are user interested questions among the channel.

When users register their own questions, query-user relationship will be created by the query-user matching module. The social network channel module receives query-user relation information came from query-user matching module shown in Table 1.

Table 1 Query-user data table

| Query-user data |                         |
|-----------------|-------------------------|
| Field name      | Description             |
| ID              | Query-user data index   |
| QueryID         | ID of query DB          |
| MemberID        | ID of user DB           |
| CreateDate      | Data of creating record |

The system defines relationship between the query and the user, and posts question to the related users and asks them for answer. Users subscribe for new answers to the questions and answers can be registered. These users who register answers in system use channel to view real-time updated questions other people posted and also can answer them.

The system offers user the ability to set questions and stop the channel subscription. This can prevent missing information which is relatively more concerned about frequently updated questions or answers. More likely specified questions not interested questions are stopped to subscribes in channel, so this makes it possible for effective information sharing.

3 Social network channel through query

This section describes specific interface and helps people understand this system by comparing the model analysis with other services.

This model analyse user’s posts by using famous and popular Twitter and Facebook’s API. Twitter is good at the expansion of the network rather than close relation between users. The Facebook has strong networks in many users. This model works with both SNS to extract the keywords which are more concerned by collecting users posts.

In addition, this model is suitable for the smart phones by servicing user interface. Smart phone is always connecting with Internet and has strong mobility, so it is fit for SNS model. The environments are suitable for providing real time alerts and subscribing channel updates in using service of this model.

3.1 User interface

The service begins with user’s registration. The

user basically needs to submit one’s email address and password. Then the system grants an ID for the user. The system collects the user’s posts on other SNS and returns the tag that users are care about. According to that tag, the user can edit or add the keywords that are extracted by the system. Fig. 7 shows the customizing user’s tags after their joining.

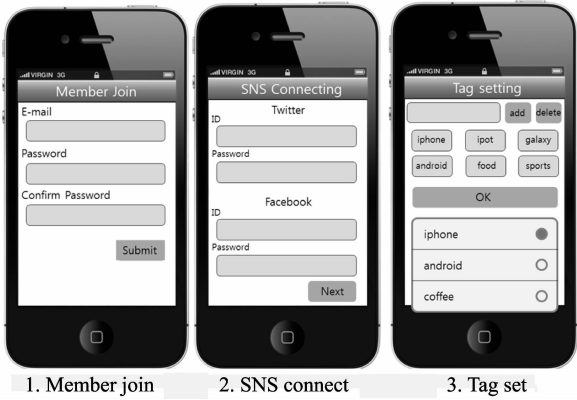


Fig. 7 Member joining UI

After registration the user can search the questions or submit the questions which are concerned by the user. It is just like knowledge searching that can submit questions and response the answers to the questions. These kinds of functions are implemented by interfaces consisting of channels that will be used by end user. Fig. 8 shows the result of searching questions and the appearance of generated channel.



Fig. 8 Generating query UI

The system provides the way for user to read the content more efficiently via feed interface. By way of this kind of feed, users can be notified by system when changes have occurred. Users can query the

questions, communicate with others, share the information with others and conform the validation of the answers through this kind of communication channel and feed. Fig. 9 shows the MyFeed interface which is provided by this system.

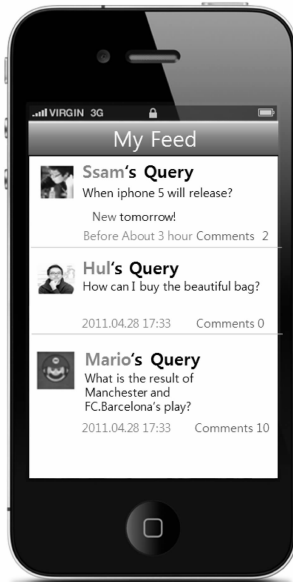


Fig. 9 MyFeed UI

The user can submit interested knowledge or additional comments to system when user subscribes the interested query channel in MyFeed. Fig. 10 shows the new answer for the question.



Fig. 10 Comment UI

For managing the Feed with more efficiently usability, user can stop reading the feed or converting the question channel to the favourite question channel. If user stops a certain channel, no updated information of that will be shown. So user can easily

see the question feed effectively. Through these convenient functions, user can see his favorite query channels in the above area of MyFeed.

Thanks to this kind of function, user can concentrate on the interested questions. That is what we want and fit for this kind of model. Fig. 11 shows the appearances of the updating, reading and stopping query channels of MyFeed.



Fig. 11 Functions on MyFeed UI

### 3.2 Model analyzing and comparing

This clause evaluates the concept and service of this model.

We will show the differences between this new model and basic SNS to explain the model that we suggest. Fig. 12 is the diagram about the concept and differences between the basic SNS and the suggested model.

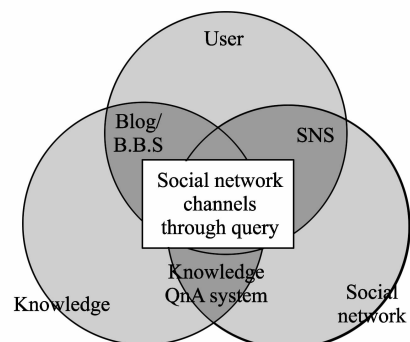


Fig. 12 Concept diagram

The suggested social network channel through the

query combines the user, the advantages of social network and knowledge QA system together.

Such combination not only takes charge of other service deficiency but also provides various advantages of service in one time.

We use reliability of answer, share & participate

and real-time update & alert as three valuation basis. Share & participate is for user who participates in ask & answer freely. Real-time update & alert is the system that can alert users when the new answer comes out constantly. Table 2 shows the differences between the mode and other services.

Table 2 Comparison between model and other services

|                        | Services                             |          |                 |           |
|------------------------|--------------------------------------|----------|-----------------|-----------|
|                        | Social network channel through query | Blog/BBS | Knowledge Q & A | SNS       |
| Reliability of answer  | Reliable                             | Reliable | Reliable        | Not       |
| Share & participate    | Open                                 | Open     | Not             | Open      |
| Real-time update/alert | Available                            | Not      | Available       | Available |

By comparison, it can be seen that this model has advantages over web search, social network service and knowledge QA system. In addition, it is well designed for smart phone with friendly user interface so that it is convenient for end users.

4 Conclusion

SNS concentrates on creating contents and sharing them, but it is not efficient in searching or finding who knows information about user’s questions. The collecting information is efficient in knowledge QA system and the managing information is efficient in posting user blog.

We extract the user’s favourite keywords through collecting user’s posts on other SNS, matching these keywords with questions of other users, creating the relations between the query and the user, and forming the independent network channel from it. Users can talk about the questions which are needed to answer on own smart phone. This activity enables sharing information and provides reliable answers from expert who has the same favourite keywords. Among these kinds of communications, users can experience the advantages of the SNS which contain searching knowledge, sharing knowledge and interacting to improve information productivity and information sharing. It also contains professional consultant.

The other users not only gain the information of the issue, but also achieve the related information and environment.

In this paper, our suggested model has limitation in handling natural language to keywords more flex-

ibly. So we should construct the category of the dictionary for keywords so that questions can be mapped to keywords more flexibly. Also it meets the changes of the keywords to user in future research.

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