

# YOKAN TABLE

## *An Intermediary System between Notables and People*

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**Abstract:** There are a lot of people who want to meet active notables by whom he or she may obtain the chance of as a human being. Currently, the informations to meet notables are scattered in various places on the Web, and we have to view the Web pages either from news sites, word of mouth sites, blog sites, etc. to look for necessary information. However it is troublesome to view the web pages carefully everyday, and it is a problem to overlook the important information. In this study, we aim to make a lot of chances to meet notable people. In order to collect and analysis the information of notables appearance that scattered on the web are collected and analysis, we developed a system called YOKAN (presage) table with the function of notification of newly arriving information on physical table.

## 1 INTRODUCTION

We are looking for the chance of growing every day. Especially, meeting notables is the best opportunity because it brings not only knowledge and knowhow but also a lot of inspiration. Currently, there is a lot of information to meet notables like the notification of the talk events etc. But then is no much, we have to view the Web page of the news sites, blog sites. Moreover we also need to look for necessary information carefully, and it is a problem that we often overlook the information. In addition, we should always check the newly arrived information. It is difficult to searching an interesting notable daily, and checking the site carefully everyday.

Therefore, we'd like to design and implement the Web service called Yokan (presage) table that collects notable's appearance information. In this study, we aim to make a lot of chance to meet notable people. We designed and implemented Yokan talble.

## 2 YOKAN TABLE

The Yokan table is a systems that notifies newly arriving information on physical table. In this research, we

defined the design policy that people can collect information everyday without the stress, and can keep user continuously access system. Hereafter, we explain the function of the Web part and the table part of the system.

### 2.1 Web Part of the System

In this study, we focused on the talk event as a good opportunity to meet a notable. The talk show and lecture meeting informations that indicated in the future are collected from web automatically. We defined future information is within three months. We utilized the Twitter that display the information in time line (Figure 1).

User's judgment index, includes not only essential information of (1) the date of talk-events (2) the notable name (2) and (3) talk-events name, but also (4) information of notable specialized field and (5) degree of attention are displayed in addition. Information is updated every 24 hours.

### 2.2 Physical Table Part of the System

The purpose of the table part is to induce the user from daily life to the Web page (Figure 2). And it



Figure 1: Screenshot of Web service.

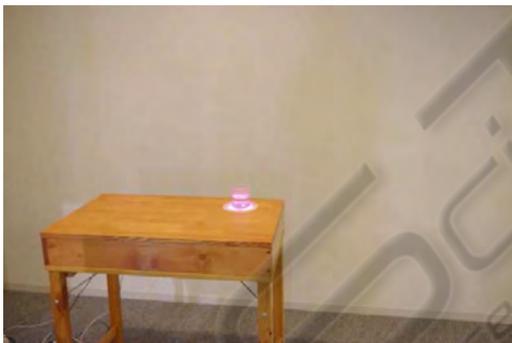


Figure 2: YOKAN Table appearance.

informs the sense that comes close to famous people. In this study, using metaphor that a surrounding thing vibrated because of the rumbling of the earth when the massive creature moved. Desktop coaster part is prepared, and the glass of water will shake glass. The size of the shake changes depending on degree of attention of talk-event, and the color of the coaster changes depending on notable specialized field.

The users feels the scene that a notable approached on the YOKAN table in breakfast and dinner, and checking detailed information on the Web service before going to school, commuting, and break time.

### 3 IMPLEMENTATION

This chapter describes implementation of the software and the hardware of the YOKAN table.

#### 3.1 The Software

To obtain talk-event information of notables, Twitter of the microblog service was used. It explains that semantics step of the system as follows (Figure 3).

1. First of all, by using "Twitter search API" that Twitter offers, the comment that is called "tweet" where the keyword "talk-show" or "lecture" included is acquired. These data is brought together every day, and it processes day by day.
2. Next, to make the quote comment that is called "retweet" and "tweet" of the similar content group, the vector space model is applied to the similarity calculation of "in one tweet" and "another tweet". To make the feature vector of each "tweet", the morphological analysis is done to each "tweet", and elements count of feature vector is composed of the number of all noun, each elements weight is composed of the count of the corresponding noun.
3. For the similarity calculation, using cosine similarity. The cosine similarity of feature vector X and feature vector Y is calculated in expression (1). Merge of "tweet" is done by using the shortest distance method of a hierarchical clustering, and merge is repeated until cosine similarity become under the sub threshold. When clustering is finished, each cluster becomes one event.

$$sim(X, Y) = \frac{\vec{X} \cdot \vec{Y}}{|\vec{X}| \cdot |\vec{Y}|} = \frac{\sum_i x_i y_i}{\sqrt{\sum_i x_i^2} \cdot \sqrt{\sum_i y_i^2}} \quad (1)$$

$x_i$ Weight of element $_i$  of feature vector X  
 $y_i$ Weight of element $_i$  of feature vector Y

4. Finally, name of person, the person's category and events name have been extracted from each event information. The morphological analysis is done to each event information. When the combination of last name and first name existed, it extracted as a name of person. Person's tag information is extracted from person search engine "Fined him in SPYSEE" (<http://spysee.jp/>), and the person's category is decided from tag information by the rule that the system decided beforehand. By the

HTTP access to URL that exists in event information, contents of the Title tag in the HTML source has been extracted as an event name.

### 3.2 The Hardware

Figure 3 showed the structure of hardware. The hardware of the YOKAN table used a wooden table (100mm x 70mm x 70mm) on the market. To keep space that built in the mechanism internally, the top board with space was added. And space that holds the mechanism internally was secured. we used the DC solenoid (12V) and the 3M Co. pocket projector (MPro120), for shaking mechanism and for color projection mechanism respectively. For we used Arduino to detect the glass on the coaster. And the system also controls the DC solenoid and projection color.

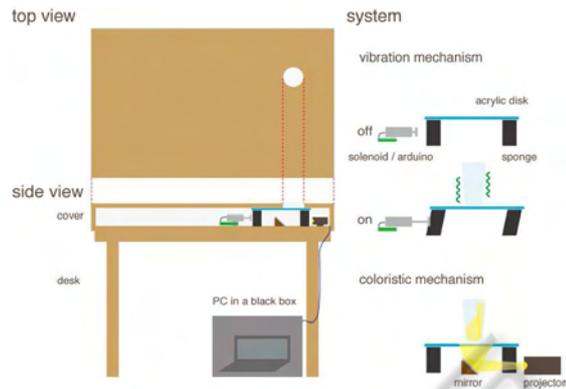


Figure 4: Hardware configuration diagram and structure.

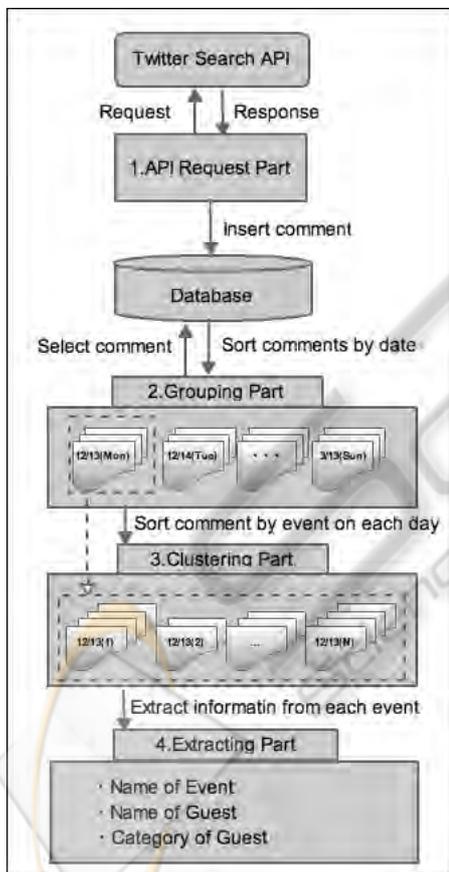


Figure 3: System configuration diagram.

## 4 DISCUSSION

We found that more than 90% is next three month information in the extracted information. Because

this future information often contains URL, an official Web site of talk-events information can be acquired. As a result, it has been understood to obtain useful information by focused on at the date.

Recently, the weight of the feature vector uses only the number of the nouns, so we have to examine weight. Moreover, the threshold of the cosine similarity of clustering is set to "0.5". But after a detailed experiment is done, it is necessary to fix this threshold.

From now on, we will explain comparative experiments on the data acquired from micro blog and general search engine, and experiment on utility using a lot of data and examinee.

## 5 RELATED WORKS

It remarkable that the number of Twitter user is 11 million in Japan on November, 2010. Because a lot of services that focused on event informations and researches that using information on the micro blog exists, and we introduces them in this chapter.

There are some researches that regard each user who sends information from microblog as one sensor (Fujisawa, 2010). That means regard Micro blog as network service observes real space, and it tries to understand various events that occur by a real space from the sensing from the user. Those analyses are used the user's location information and the remark time as index. This research is same as our study about focus on event informations. But our study focuses on not user's location informations and posting time, but date informations of "Tweet" to extract event informations.

Web service called "KOTOSAGA" that helps to see event informations (<http://www.cotosaga.com/>). It uses the crawler of original development, and it collects event informations automatically from more

than 700 event informations sites. "KOTOSAGA" is based on the element of "date" and "place", so we can also know information around the event hall, for example, weather, map etc.

## 6 CONCLUSIONS

In this study, we aim try to give chance for people who want to meet notable. For this purpose our system called Yokan Table that collects notable's event information. And the Yokan table that notify newly arrived information on desktop glass was designed and implemented. Usually, to meet notable, we should view the Web page from the news site, by word of mouth site, site of notable himself etc. Moreover we also need to look for necessary information carefully, and it is the problem that we often overlook the information. Because Yokan table installed the entrance to web in daily life, users can obtain the chance meeting notable more comfortably. In the future, we want to aim at personalizing to offer information matched to user's interest.

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