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Hybrid WOM Collection and Visualization Method for Reputation Rating in Online Community

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Abstract

Recently, the websites involved in online transaction lacks explicit information on the reputation of the users acting as raters. This problem could be solved if there is a third party to guide the candidates involved in the online transaction. Online source of information about web documents need many users' evaluations. Such information can be available for other users. The feedback of the users can reorganize the group and refine the knowledge level that a group of human experts provide. We generate Word of Mouth (WOM) metrics and show the reputation as allegorical figuration by 3D graphic visualization. We found out possible WOM candidate and they can provoke the opinions.

Keywords: Online Community, Reputation Rating, Reputation Systems, Visualization, WOM Collection

1. Introduction

Trust and reputation systems represent a significant trend in decision support for Internet mediated service provision[1,2]. Online source of information about web documents need many users' evaluations. Such information can be available for other users. The feedback of the users can reorganize the group and refine the knowledge level that a group of human experts provide. This kind of adaptive organization and personal feedback will give users an access to specific domain knowledge, and has a filtering effect on biased opinions from a few people alone.

Trust and reputation has begun to attract attention in the multi-agent systems community. For example in computational market, the candidates are highly competitive and getting a reputation rating from the community members is the vital issue to achieve. There has been active research in collaborative filtering to analyze the contents of a website and ranking it therein[2]. The algorithm computes which items a user likes and possible how much the group he/her belongs like them. The user experience provided by current collaborative filtering solutions has to be improved to meet the demands of the reputation system.

In order to derive an opinion about a product or an agent there should be an effective filtering method to sieve the good quality one. Even though the collaborative filtering is being used in a large number, there is a need of a better filtering method of the Web data based on the reputation mechanism[3]. Therefore finding the proper evaluation group, modeling evaluation metrics and checking the validity of evaluation are problems to be solved. In this study, we generate Word of Mouth (WOM) metrics and show the reputation as color and size of buzz. We found out possible WOM candidate and they can provoke the opinions.

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2. Related Works

2.1 Explicit and Implicit Rating Mechanisms

Conventional reputation rating mechanisms use explicit feedback information such as user reputation evaluated by other users and so we term them "explicit reputation rating mechanisms"[3]. As an alternative method, the "implicit reputation rating mechanisms" are a promising solution to overcome insufficient and untruthful feedback problem of explicit reputation rating mechanisms. In addition, implicit reputation mechanisms might be a viable substitute or complement of voluntary feedback mechanism of the existing explicit reputation rating mechanisms[4-9]. A few implicit reputation mechanisms have been proposed and existing implicit reputation rating mechanisms extract reputation or trust from social network information. However, in most online communities, general users may refrain from providing sufficient explicit evaluation. Therefore, it is necessary to extract users' reputation automatically and implicitly from their past usage behavior in online community.

2.2 WOM Collection

The information retrieval from the World Wide Web according to the requirement of the user has been the main task behind every search engine. In response to this problem, we proposed a process to filter the data from the online transaction using the effective evaluation metrics[4]. The effective evaluation metrics based retrieval of the data from the data sets and analyzing the congruency of the data has been done. Our method is focusing on buzz metrics which is ranked in a portal (Google, Naver or Baidoo).

3. Proposed Approach

3.1 Big Mouth Selection and Survey

The overall process of our proposed approach is divided into two phases (Figure 1). First phase of our approach is focusing on the selecting the issue that we want to collect WOM information from. Then, the WOM of selected issue are collected. Second phase of the approach is focusing on the selecting the opinion leaders, called as a "Big mouth". Opinion leaders are selected by measuring the buzz metrics. Opinion leaders are asked to deliver the survey of sentimental analysis explicitly. General opinion is extracted from combination of the final result.

Big mouth is selected by other reader's agreement counts. The big mouth users have more weight than the ordinary users' opinions. Many portals now provide APIs to collect the opinions of the users. However, some of portals or community sites do not provide APIs, hence we developed the crawlers to collect the opinions. Natural language processing is the next step. We used the thesaurus dictionary to decide the opinions status on pros or cons.

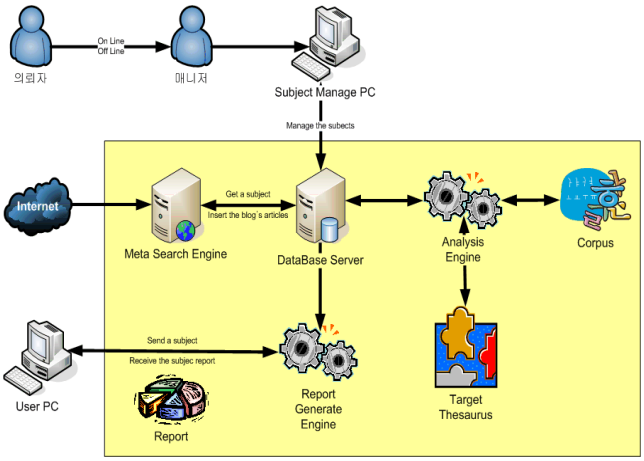

Figure 1. Overall process of the proposed method.

3.2 The "Blog Cosmos" Visualization

We considered Facebook, Twitter, and other SNS sites as a collective term used to represent the collection of all blogsites, which consists of data for millions of users who maintain an online e-business. From these collections of sites, we generate the WOM who eminently create buzz meters. We represent the buzz meter as allegorical figuration by 3-D graphic visualization, which is called the "Blog Cosmos" (Figure 2). The Blog Cosmos depict the amount of buzz as the size of planet. The color represents opinion, good or bad. The Blue is positive opinion and the Red is negative opinion, the Green is neutral. The size of the each planet represents the WOM noise metric, i.e. how much the issue is treated among the people community.

We defined a group of people with high authority as opinion leaders. This opinion leader group is automatically promoted from general users to evaluate Web blogs within a specific category. In this study, a "community user group" means the group of entire users within a specific

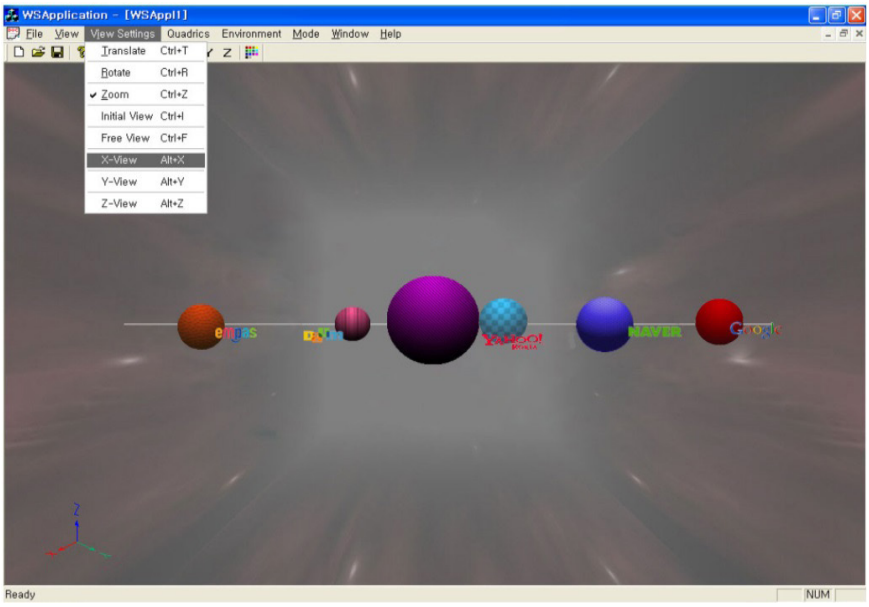

Figure 2. Blog Cosmos screenshot.

Output: a WOM-file X for γ

```
1   S ← the slab-file of γ in S
2   if γ is not a slab at the bottom level of recursion then
3   S1, ..., Sm ← the slab-files of sub-slabs of γ in S
4   R ← the set of spanning rectangles of γ in R
5   MarkSweep(S, S1, ..., Sm, R )
6   for i = 1 to m do
7   Xi ← DoSecondPhase(γi, m)
8   X ← IntersectSweep(S, S1, ..., Sm, X1, ..., Xm, R )
9   else
10  R ← the set of WOMS of γ in R
11  X ← CreateEvaluationFile(S, R)
12  return X
```

Figure 3. WOM collection algorithm.

online community and an "evaluator group" means the group of comprised of opinion leaders that are selected on the basis of their reputation. Figure 3 shows the algorithm of the proposed WOM collection method.

Thesaurus is a dictionary contains synonyms and acronyms and relationship between the words. In this research we develop related thesaurus. Then we will create the entertainment related thesaurus. After obtaining the big data of the opinions we compare with the target product or services. WOM metric is generated to have the different weight for the opinions. The goal of this system is WOM collection on products and service. The result is calculated implicitly and explicitly. Brand and product preference is summarized and categorized using three evaluations. Thumbs up thumbs middle and thumbs down. Total evaluation is shown using three different

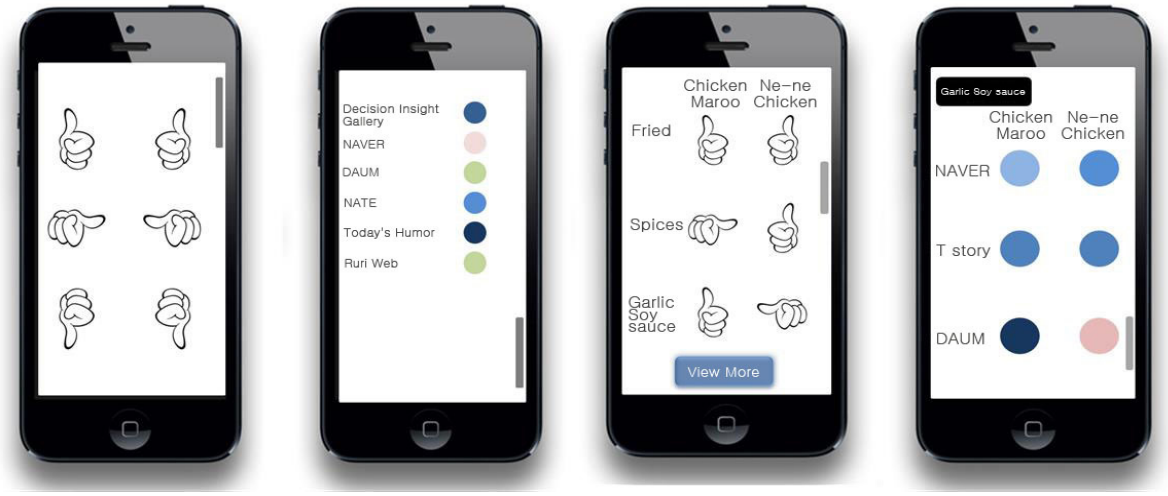

Figure 4. User interface of the pilot system.

colors. Three colors represent with green, yellow and red. The initial UI screen shows the above Figure 4. Customers start with the scope of the searching SNS spaces. After the customer select the search space and terms to search. It searches various articles and blogs. After collecting the related data the customer can delete the unrelated data. Our system explores two types of the search. Search in glance shows the thumbs up down. Then detailed data can be viewed for the detailed information.

4. Conclusion

We proposed a systematic method for hybrid method for WOM meter collection. Our proposed system could overcome the problems of insufficiency of ratings and unfair ratings in the existing explicit reputation systems. Since hybrid metrics uses WOM survey and explicit reputation computation of the online community users. We collected the opinions show as reply to a certain topic. We also investigate other SNS sites such as Facebook and Twitter.

In the future, we will also exploit different kinds of media sources such as online news, magazines, and communities. For this, we are implementing an additional data crawler and parser to handle heterogeneous data with various layouts and types. Contrary to the popular SNS services such as Facebook and Twitter, since no open APIs are given for gathering those media data, there are some hurdles to overcome to extract more meaningful opinions from them. Our language processing also should be improved to have better performance.

5. Acknowledgement

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