

Social Media Based Creative Student Affairs Work Management and Support System

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Abstract: The past few years have brought huge growth in social media, and it has become a new media that rivals the traditional media. College students are the most positive users and participators of social media. Social media differentiates from traditional media in many aspects, such as it allows users to enjoy more rights to choose, more freedom to edit, and giving users a great participation space which leads a profound revolution of information dissemination. It brings huge changes of the environment, subject, object, copula and effect of the student affairs work. This not only enables us to perform student affairs work more scientifically and effectively, but also brings us unprecedented challenges in the management of the student affairs work. Therefore, this paper proposes using the technology of big data mining and social computing [7] to obtain college students generated contents on social media. Then, extracts and analyzes the essential information embedded in the collected data based on the theory of sociology, communication studies, behavioral science and psychology, and thus to make it possible to collect the hobbies and interests, opinions, mood fluctuations and behaviors of students in real-time, and give scientific and reasonable feedback. Furthermore, it also enables us to equally communicate with students and understand the real needs of students. Our system can provide data support for timely, scientifically and effectively performing student affairs work, and in return it is useful for scientifically evaluating the effectiveness of our student affairs work.

Keywords: Student Affairs Work; Management and Support System; Social Media; Data Mining; Natural Language Processing

1. Introduction

Web 2.0 brings the booming of social media. Under the development of Facebook, Twitter in American, the Renren, Weibo, Wechat, Blogs in China also triggered the evolution in message transmission. Social media allows people to share opinions and experience freely, initiatively, equally through the websites in the fertile land of Internet and bursts huge energy as well as generates mass data and information.

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Student affairs work must fit the development of age, seizing the laws and promoting the scientific, pertinence and efficiency by using the large-scale social media data.

The widely used of social media in college students provides amounts of information and data for student affairs work, but also brings us new challenges in the management. According to the 33th “**Statistical Report on Internet Development in China**”² published by China Internet Network Information Center, the scale of Chinese netizens reaches 618 millions and the internet penetration reaches 45.8% by December, 2013. Recently, the online social communication based application platforms developed rapidly. As a result, more than 50% netizens are the users of mobile internet applications which are based on social networks, such as Sina Weibo³, Renren⁴ and WeChat. These applications attract billions of people posting messages, uploading pictures and videos, sharing music and thoughts via internet. The hobbies and interests, opinions, mood fluctuations and behaviors of users are embedded in these user generated contents. The large-scale social media data provides us the opportunities to explore unknown laws of human beings from it. As for as college students, the coverage ratio of social media almost reaches 100%. Most young students generate contents actively, willing to express their thoughts and abreact their moods, or just share useful information. Every day, a huge number of social behavior data are stored in network space, which creates an unprecedented condition for us to observe the society. How to make full advantage of the mass data generated by the college students to help us providing accurate, objective and efficient intelligence supporting for student affairs work in real-time is a challenging problem. The work is important as it has been a new measure for evaluating whether the student affairs work is scientific and long-effective, and also creates new valuable opportunities for further improving the efficiency and effectiveness of student affairs work.

Taking full advantages of social computing and data mining technologies, we construct a platform for obtaining, analyzing and processing large-scale social media data. It intelligently excavates the students’ demands and characteristics, so that we can seize the optimum moment of education. It also constructs a targeted education carrier and designs the education methods to teach students according to their aptitude. Collecting the feedbacks of students and evaluating the effectiveness of student affairs work effect can abidingly improve the performance of student affairs work. The intelligent student affairs work decision supporting platform based on the technology of computer science, sociology, psychology and pedagogy, has significant theoretical significance and practical value. Promoting the timeliness and accuracy of information acquisition for supporting student affairs work by using new-tech methods, has been a key problem in improving the scientific level in student affairs work [9].

² <http://www.cnnic.cn/hlwfzjy/hlwzxbg/hlwtjbg/201207/P020120723477451202474.pdf>

³ <http://www.weibo.com/>

⁴ <http://www.renren.com/>

2. System Description

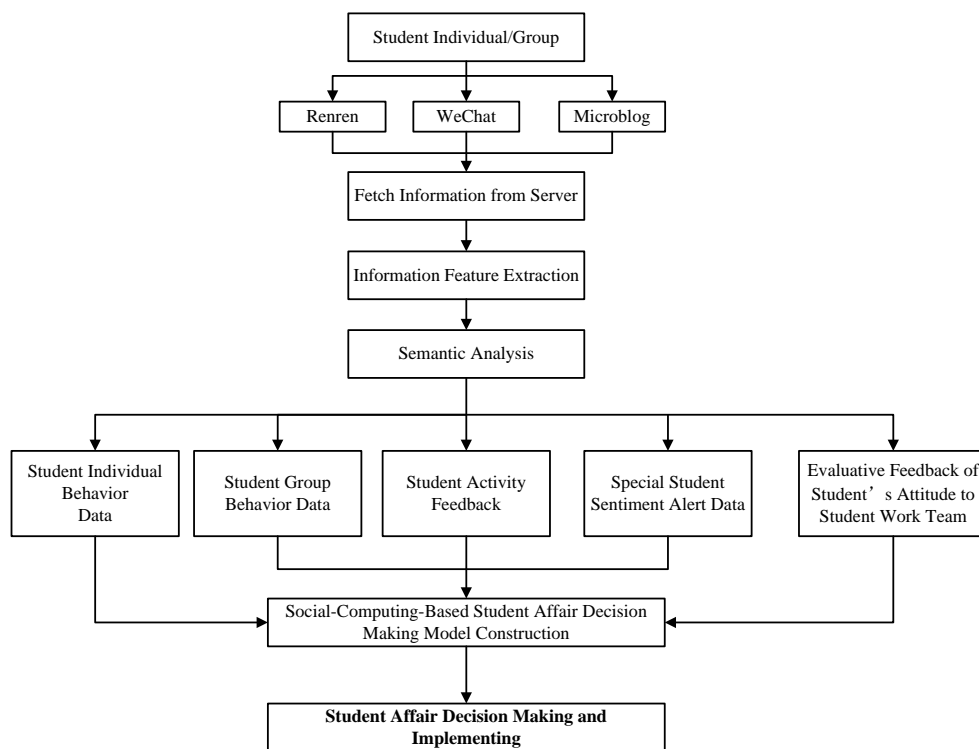


Figure 1: The architecture of system

We develop a student affairs work management and support system which is based on the technology of real-time data obtaining and intelligent data analysis. As illustrated in Figure 1, the system can extract and analyze students' individual behavior data such as position, interesting, opinion and the volatility of emotion. As well, it also can extract and analyze students' group behavior data such as the volatility of mood of a group of students for a specific event. Moreover, the system can extract and analyze the public sentiment features, activity feedbacks, work evaluation measure and so on.

● The Method for Real-Time Emotion and Behavior Data Acquisition Based on Online Social Network

Students post their information through social media such as Renren and Sina Weibo (Chinese famous online social network platforms). These messages are stored in webpage format and some of them associated by hyperlink, and thus construct a large-scale information resources network. By using the technology of natural language processing, psychology, artificial emotion and cognitive science, we classify the obtained data, and by deep web crawler (as shown in Figure 2) [8], we can effectively extract the dedicated resources embedded in the backend database, which are the basic communication and sharing messages in Renren and Sina Weibo platforms. Subsequently, we go on the procession of web page reduplication removing, word segmentation [1], feature extraction [6], key words extraction [5] and topic mining [4], for providing the foundation of data analysis and processing.

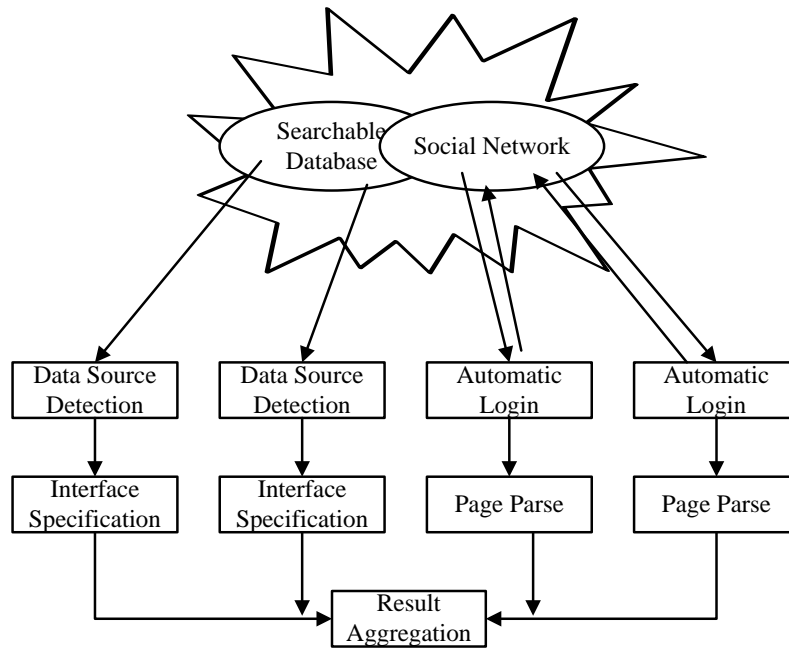


Figure 2: Deep web crawler

- **The Analysis and Study of Student Individual Behavior Based on Social Media**

The social media data could truly reflect student’s behavior. As usual, students are used to express their various moods on the online social network. For example, if the weather is good when get up in the morning, they would post a tweet says “the weather is great and I am happy”, when the exam is finished, “most questions are hard to answer, I may fail.”, and make some comments on the “FIFA World Cup 2014”. In addition, their daily schedule could be reflected by the statistics of their timing of posting the tweets. We could get their focus of attention and interest points by the technique of word segmentation and key words extraction on the obtained data; understand the volatility of emotion, such as happy, angry, sad, fear and surprise by the technique of sentiment analysis (as shown in Figure 3) [2]; get the degrees of recognition about policies and regulations and the degrees of acceptance about the social attitude in significant affairs of students by the technique of opinion mining [3]; get the connection channels between students and outside world by the technique of social circle identification. With the support of the above data, we can directly perform the student affairs work and ideological education more scientific.

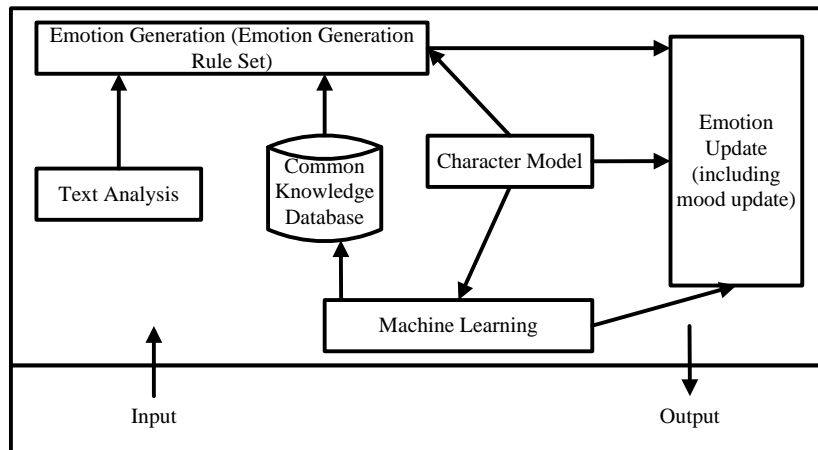


Figure 3: Sentiment analysis

- **The Analysis and Study of Student Group Behavior Based on Social Media**

When an important event happens, social media is the most important opinion expression platforms and message transmission carriers. The system offers strong support on the aspect of both technique and data for accurately judging the attitudes that students hold, emotions, and the actions which may be adopted. On the other hand, by analyzing the students generated contents on Weibo and high frequency words statistics, the students' interesting and attention could be realized; the potential hidden danger of students could be warned and be intervened by teachers; and the true virtue could be popularized. By the research of message transmission mechanism, this system can give advices on the wording of Weibo, release timing, and transmission route, making our messages broadcast widely among the student group. Based on this system, we can acquire the entire situation of students at a low cost, and improve the efficiency of student affairs work.

- **The Research of Student's Special Situations Warning Based on Social Media**

Special situations include natural disasters, individual incidents, group contingencies, internet addiction, too much energy on outdoor activities, financial difficulties, physical illnesses, relationship disorder, extremely thinking, psychological illnesses and so on. According to different situation, various "warning values" are adopted, including "social media users data analyzing technique (nature information, positions, interests, specialties, swing focus)", "social media users emotion tendency analyzing technique", "social media users circle analyzing technique". With these techniques, we analyze students and their groups by real-time analyzing, horizontal comparison analyzing, continuous tracking and digging, longitudinal comparison analyzing, and the analyzing as well as pre-judgment of the tendency about special situations such as burst incidents, studying difficulties, psychology problems. The sensitive special situations could be found and the alert would be delivered to instructors and related departments, so that effective prevention methods could be made soon.

- **The Research of Technology on Social Media for Serving the Student Affairs Work**

The system takes advantage of the power of mass data (as shown in Figure 4) to build a networked decision supporting platform, thus makes the messages sources turn into undirected and hidden channels from directed and obvious channels. At the same time, channels from top to bottom change to flap ones, the ways of making decisions take the emotions and habitats of students into consideration compared to the original ways which teachers took the lead. The scientific level of student affairs work is keeping promoting and become more attractive, effective and targeted [10].

The acquisition of the characteristics of students and their potential demands, makes it possible to observe messages and emotions which are hidden in the past, also makes it clear about the habitats, favorites and tendencies of students. A microscope and a multi-dimensional mirror are added to the student work, and more accurate basis is provided for us to carry on targeted student work.

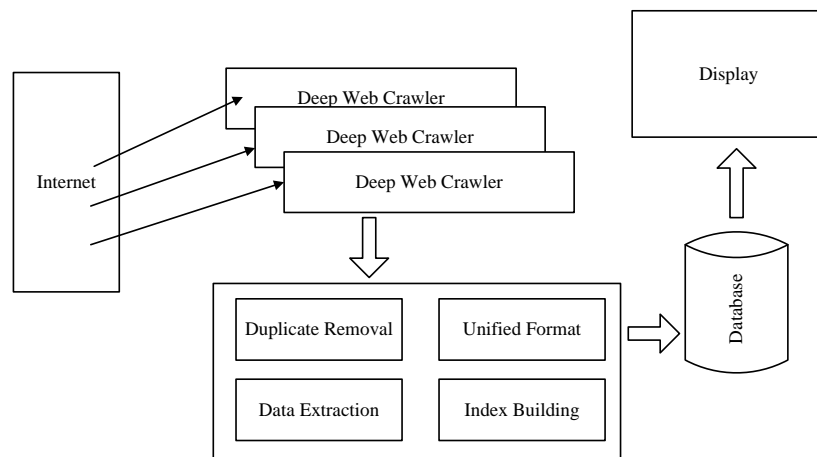


Figure 4: Data stream

3. Case Analysis

At the beginning of the spring semester this year, according to the survey of Weibo ranked in the three days of hot words on March 11th-13th, we found that the word “reading” ranked 141th, with little attention, only 0.5%. In reaction to this phenomenon, we planed to organize a Weibo activity named “happy reading everyday” to meet the needs in the procession of students’ growing.

In the aspect of the design of activity content, we’d like to make reading, sharing, and participation prominent. Reading means that teachers and students should read at the same time. In addition, they ought to share information anytime and anywhere, to realize the interaction between organization and students, make the book drifting online and Journal entry online possible. In the part of activity language design, we would choose the network language systems which were popular among the young students, such as “positive energy”, “friends”, “showing book bill”, “showing praise” to stimulate the enthusiasm of students to take part in these activities. Finally, in the

part of activity propagating design, we could use propagation prediction system and take full use of network V such as HIT official Weibo and WeChat during the Weibo peak time of 6:30 am to 8:00 am to make more and more students join in our activity.

We launched “happy reading everyday” on March 14th, initiating reading an hour per day and inviting participants to say out “showing out your private book list” or “writing down the book you want” or “sharing Journal entry of the book”. The top 5 students whose Weibo forwarded quantity highest will be selected, with an exquisite book as a prize.

As of March 16 22:00 pm, the “happy reading everyday” activity had lasted for 62 hours, showing that the total amount of attention, reading, forwarding and showing prize were more than 25000 times. Under the help of application of network media to grab analysis software, we got that the word ”reading” ranked 3th of Weibo ranked in the three days of hot word on March 14th-16th, with a higher attention of 8.5% .

References

1. Saffran J R, Newport E L, Aslin R N. Word segmentation: The role of distributional cues[J]. *Journal of memory and language*, 1996, 35(4): 606-621.
2. Pang B, Lee L. Opinion mining and sentiment analysis[J]. *Foundations and trends in information retrieval*, 2008, 2(1-2): 1-135.
3. Pak A, Paroubek P. Twitter as a Corpus for Sentiment Analysis and Opinion Mining[C]//LREC. 2010.
4. Zhao W X, Jiang J, Weng J, et al. Comparing twitter and traditional media using topic models[M]//*Advances in Information Retrieval*. Springer Berlin Heidelberg, 2011: 338-349.
5. Matsuo Y, Ishizuka M. Keyword extraction from a single document using word co-occurrence statistical information[J]. *International Journal on Artificial Intelligence Tools*, 2004, 13(01): 157-169.
6. Nevatia R, Ramesh Babu K. Linear feature extraction and description[J]. *Computer Graphics and Image Processing*, 1980, 13(3): 257-269.
7. Parameswaran M, Whinston A B. Social computing: An overview[J]. *Communications of the Association for Information Systems*, 2007, 19(1): 37.
8. Thelwall M. A web crawler design for data mining[J]. *Journal of Information Science*, 2001, 27(5): 319-325.
9. Upcraft M L, Schuh J H. *Assessment in Student Affairs: A Guide for Practitioners*. The Jossey-Bass Higher and Adult Education Series[M]. Jossey-Bass Inc., Publishers, 350 Sansome St., San Francisco, CA 94104, 1996.
10. Kuh G D. *Student Affairs Work, 2001: A Paradigmatic Odyssey*. ACPA Media Publication No. 42[M]. Order Services Dept., American College Personnel Association, 5999 Stevenson Ave., Alexandria, VA 22304 (Order No. 72153, \$20.00)., 1987.