A Multi-Dimensional Model for Assessing the Quality of Answers in Social Q&A Sites

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Abstract: The quality of user-generated content in Web 2.0 dramatically varies from professional to abusive. Quality assessment is therefore a critical problem in producing, managing and retrieving information in Web 2.0. In this paper, we develop a multi-dimensional model for assessing the quality of answers in social Q&A (Question & Answer) sites.

1. INTRODUCTION AND RELATED WORK

The amount of user-generated content available on the Web is dramatically increasing and constitutes an important source of information in the age of social media and Web 2.0. However, the publication threshold in social media is rather low due to a lack of editorial control.

In this paper, we focus on quality assessment of answers from social Q&A sites, such as Yahoo! Answers, Answerbag or Wiki Answers. Social Q&A sites are platforms where users may post questions and get answers from fellow users. Our work is set in the context of a broader project on Question Answering (QA) for eLearning based on social media content [1] whose goal is to build an automatic QA system targeted at learners. Quality assessment plays a critical role in this project since the answers delivered to the learners by the system should be especially accurate and readable.

To this aim, we describe a *multi-dimensional* model for the quality of answers in social Q&A sites. Some multi-dimensional quality models have been developed for specific types of Web contents in the past. Hammwöhner [2] and Stvilia et al. [3] built quality models for Wikipedia and used non-textual features like links and edits to analyze quality. Yadav and Bellah [4] focused on the cohesiveness between Web pages to predict the quality of a website using semantic similarity. But to our knowledge, there is no systematic framework for assessing the quality of answers in social Q&A sites.

We first present the methodology adopted (section 2), then describe our quality model (section 3).

2. METHODOLOGY

There are several methods to identify quality dimensions. In this study, we used the following sources of information: a user survey, expert experience and advice, and a comparison of expert and lay answers.

User survey A survey question "How do I write a good answer?"[1] was posted on Answerbag two years ago. Until now,[2] it has received 185 answers, 41 comments and 476 overall votes. In these answers and comments, the end users of Answerbag freely discussed what they think are important criteria for a good answer. We manually extracted quality dimensions from these answers and comments. The following two user answers exemplify how the dimensions have been extracted:

Example 1: "your answer should be concise, easily read, do not add personal feelings to an answer."
For this example, we manually extracted three dimensions: *Conciseness*, *Readability* and *Objectiveness*.

Example 2: "Don't use abbreviations, example, 'u' for the word 'you'. Don't curse, and be polite, make sure your spelling and grammar is correct." For this example, the *Readability* and *Politeness* dimensions are extracted. One dimension can be extracted from more than one answer. In detail, we found the following dimensions(figures in parenthesis indicate the number of answers in which the dimension is

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[1] http://www.answerbag.com/q_view/138108

[2] As of June 28th, 2009

mentioned): *Readability* (29), *Truthfulness* (28), *Politeness* (28), *Relevance* (18), *Informativeness* (17), *Conciseness* (9), *Originality* (5), *Objectivity* (4), *Level of Detail* (2), and *Novelty* (2). Based on the user survey, *Readability* is the most popular quality dimension followed by *Politeness*, *Truthfulness*, *Relevance* and *Informativeness*.

Expert experience and advice Experts' experience and intuitions are undoubtedly valuable for identification of quality dimensions. We used guidelines on how to write a good answer in social Q&A sites as expert advice. The guidelines from three social Q&A sites, namely Answerbag[3], WikiAnswers[4] and Yahoo!Answers[5] have been studied. These guidelines tend to provide general and important principles. We manually extracted quality dimensions from these guidelines just as we did for the user survey. The results show that most of the dimensions dicovered from the experts' guidelines overlap with those extracted from the user survey. All 3 guidelines stress *Readability, Politeness, Informativeness* and *Relevance*. Two of these three guidelines mention *Usefulness*. But *Truthfulness* together with *Originality* and *Objectivity* is referred to only once, which is a little surprising. We hypothesize that these guidelines want to encourage contributors to be bold and not to be afraid to post answers.

Comparison of expert and lay answers This approach can be used to discover more subtle dimensions. We examined 20 expert answers from AllExperts[6] and compared them with answers on the same topic[7] in Answerbag. By comparing these 20 pairs, we discovered a new dimension: *Expertise*. This dimension is significantly discriminative for 16 of these 20 pairs.

3. QUALITY MODEL FOR ANSWERS IN SOCIAL Q&A SITES

Overall, 13 quality dimensions were identified: (1) *Informativeness*: suitable amount of information provided by the answer; (2) *Politeness:* respect for others' feelings and opinions; (3) *Completeness*: self-contained answer; (4) *Readability*: legible answer; (5) *Relevance*: conformance to the subject of the question; (6) *Conciseness*: compact presentation of the answer; (7) *Truthfulness*: trustable answer; (8) *Level of Detail*: suitable degree of granularity; (9) *Originality*: authentic answer which has not been copied from other sources; (10) *Objectivity*: impartial answer; (11) *Novelty*: innovative and creative answer; (12) *Usefulness:* useful or helpful answer; (13) *Expertise*: answer written by an expert.

In future work, we will do extensive experiments to validate the quality dimensions identified. A model for predicting the overall quality based on the quality dimensions will be explored. Our long-term research goal is to build an automatic system using Natural Language Processing techniques to predict each dimension and assess the overall quality of answers in social Q&A sites.

REFERENCES

[1] I. Gurevych, D. Bernhard, K. Ignatova and C. Toprak, Educational Question Answering based on Social Media Content, In: Proc. of the 14th International Conf. on Artificial Intelligence in Education, pp. 133-140, 2009.

[2] R. Hammwöhner, Interlingual Aspects of Wikipedia's Quality, In: Proc. of the 12th International Conf. on Information Quality, pp. 34-49, 2007.

[3] B. Stvilia, M. B. Twidale, L. C. Smith and L. Gasser, Assessing Information Quality of a Community-based Encyclopedia, In: Proc. of the 10th International Conf. on Information Quality, pp. 442-454, 2005.

[4] S. Yadav and J. Bellah, An Improved Method for Automatically Determining Webpage Cohessiveness for Quality Information Retrival From WWW, In: Proc. of the 11th International Conf. on Information Quality, 2006.

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3 http://www.answerbag.com/guideline/

4 http://wiki.answers.com/help/answering_questions#Writing_Good_Answers

5 http://answers.yahoo.com/info/community_guidelines

6 http://en.allexperts.com/q/Trees-739/indexExp_23328.htm

7 We gathered the answers from the topic 'trees' in Answerbag: http://www.answerbag.com/c_view/2544