Application on Semantic Web Technology in Automatic Assessment of English Compositions

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Abstract: In recent decades, automatic composition evaluation has made great progress in foreign countries, and the system is widely used in practice. In recent years, automatic evaluation system has gradually become a hot and important research object in natural language processing. Automatic evaluation is non-manual, and the composition is graded by computer. This paper first introduces the related concepts and characteristics of Semantic Web. And then it introduces the significance and main systems of automatic evaluation system. Finally, this paper puts forward some suggestions for the problems faced.

1. Introduction
Like the computer in the 21st century, with the help of modern technology, especially Semantic Web technology, it is possible to realize the scientificalization and humanization of automatic composition evaluation. Semantic Web technology enables computer analogs to judge and appreciate compositions. "Semantic Web" is the concept of the next generation of the World Wide Web put forward by Berners Lee in 1998. Generally speaking, the Semantic Web can be regarded as a kind of network with grammar and syntax. Semantic Web is a global information network linked by words. It is a global database linked by machine processing. In a narrow sense, Semantic Web is theoretically a kind of network that can describe knowledge. So, it can best solve the problem of computer information, especially knowledge information intellectualization. The core technologies of Semantic Web are as follows. Semantic Web technology will arrange natural language reasonably according to human's understanding mode, so that natural language processed by network can deal with grammar, syntax and semantics. In this way, we can improve the efficiency and convenience of human-computer interaction. Semantic Web technology is semantic understanding, including information in semantics, context, and grammar. It is a high integration of linguistics and modern technology, and it is a very important future technology.

2. Significance & Major Systems of Automatic Evaluation System

2.1 Significance of Automatic Evaluation System
In our country, a teacher brings a large number of students, so they have a heavy burden of correcting their compositions. Overweight burden will reduce the training of students' English composition, so the students' writing level can not be improved. It is a good way to revise composition by using automatic composition score. Compared with manual revision, automatic composition scoring system has the following advantages. Firstly, computers will not be tired, more sustainable and efficient. The automatic evaluation system will evaluate every composition more carefully and objectively than manual work, which will be more fair and objective. Secondly, it can greatly reduce the workload of teachers' corrections, so that teachers can have more time to prepare lessons and explain. The automatic scoring system can easily count the weak points of students when scoring, so that teachers can teach...
more targeted. Thirdly, students can write more compositions to further improve their writing level. After the reform of College English teaching, the English curriculum has been reformed in different levels and classes. Every teacher in reading and writing class faces hundreds of students. How to make students have more writing opportunities and get instructive feedback has become an urgent task in writing teaching.

2.2 Major Systems of Automatic Evaluation System

There are several main automatic evaluation systems for compositions at home and abroad. Firstly, PEG (Project Essay Grader). The research of automatic evaluation technology began in the 1960s. Ellis Page, a professor at Duke University, led the research team to develop the first automatic composition scoring system PEG in 1966. PEG only emphasizes the analysis of language surface structure and neglects language content. Secondly, IEA (Intelligent Essay Assessor). IEA was developed by Pearson Knowledge Analysis Technology in the 1990s. IEA pays attention to the analysis of composition content, and uses latent semantic analysis in information retrieval to score composition automatically. Through the latent semantic analysis of information retrieval, IEA can automatically score compositions. Thirdly, E-rate. E-rater was developed by Dr. Jill Burstein of ETS in the late 1990s. At present, ETS is using E-rate system to grade the Analytical Writing Assessment part of GMAT, and it has been applied to TOEFL essay scoring since 2005.

3. A survey of automatic assessment system for English compositions

A total of 1000 questionnaires were issued, and 961 questionnaires were valid, with an effective rate of 96.1%. The specific analysis is as follows.

3.1 The feedback of students on automated judgment

Students will make mistakes in their compositions, such as Chinglish, vocabulary, grammar, technical details and so on. Students believe that systematic feedback can help reduce the errors in their compositions. According to the survey results, automatic assessment system can improve composition score and reduce grammatical errors, respectively accounting for 64.6% and 54.5%. The detailed results are shown in Figure 1.

![Figure 1: The feedback of students on automated judgment](image)

3.2 The feedback content expected by students

Students hope that the automatic evaluation system can give feedback on the content, vocabulary and structure of the composition. Through the evaluation of weak links, the system can guide and improve the level of English writing. According to the survey results, students hope the automatic evaluation system to give feedback in grammar, vocabulary and textual structure, respectively accounting for
66.0%, 58.2% and 55.3%. And only 12.6% hope in technical details. The detailed results are shown in Figure 2.

![Chart showing feedback content expected by students]

**Figure 2**: The feedback content expected by students

4. **Strategies for automatic assessment system for English compositions**

4.1 *Emphasizing the role of writing feedback in writing teaching*

Zamel's process writing theory regards feedback as an important part. It plays an important role in the teaching of English writing. In the process of writing teaching, teachers should infiltrate the feedback of composition into every link of English writing. Teachers should try their best to give feedback in time for each assignment, especially for composition. Whether the teaching task is heavy or not, feedback on students' writing should not be delayed. At the same time, immediate feedback should be given to every composition. Teachers must give full play to the positive role of automatic composition evaluation. Only in this way can we promote the improvement of students' English writing level.

4.2 *Students should develop good writing habits in English*

Students should insist on revising and rewriting their compositions. Good English writing habits can cultivate students' autonomous learning ability. The automatic assessment system of English compositions provides a good platform for students to revise and rewrite their own compositions. According to the instant feedback information provided by the system, students can revise and submit their compositions repeatedly, so as to get an ideal score. In this process, students will develop a good habit of writing in English. On the other hand, with the development of modern information technology, it has become a trend to develop self-regulated learning activities through the Internet, as well as the teaching of English writing. By revising and submitting compositions repeatedly, students have stimulated their learning potentials in essence. By cultivating students' autonomous learning ability, the automatic assessment system can promote the improvement of English writing level.

5. **Conclusions**

The research results of Semantic Web technology can realize the humanized evaluation of English compositions. Through the Semantic Web technology, computers can judge students' English compositions just like people. Which will bring great changes to college English writing and evaluation. At the same time, through the Internet, teachers can provide a wider range of services to provide convenient learning conditions for learners. Although this technology is not mature enough, it has been able to solve problems in practical application. We should make it serve college English writing teaching better.
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