Constructing Web-based Japanese Text Reading Support System and Its Evaluation

MOCHIZUKI Hajime  
Faculty of Foreign Studies  
Tokyo University of Foreign Studies  
3-11-1 Fuchu Tokyo 183-8534 Japan  
motizuki@tufs.ac.jp

TERA Akemi  
Japanese Course  
Hokuriku University  
1- Taiyogaoka Ishikawa 920-1180 Japan  
tera@jaist.ac.jp

Abstract
In this paper, we describe a design for our system and report the current status of the system. We also present the result of preliminary examination to evaluate an interface of the system.

1 Introduction
A variety of methods and systems to support for Japanese text reading have already been proposed[2, 4]. In our project, we design a web-based system which can be able to show various supporting information for any texts flexibly to a learner. In this paper, we explain our system and have an experimentation for comparing two different interfaces to show the information. From result of the examination, we evaluate our current system and discuss good or bad points about the interface.

2 System Overview
Fig.1 gives an overview of our system, DL-MT.

Figure 1. The system overview

First, a learner inputs or pastes a text that he or she wants to read and understand. Next, the text is sent to the main program on a WWW server via CGI. Then the main program filters the input text and decomposes it into morphemes by Japanese morphological analyzer ChaSen[1]. The system analyzes the text and adds some advice functions for the learner to the text as tags. Finally, a learner can read the text with some advice for understanding it. In our system architecture, all advice functions are implemented as modules. Therefore we can add new functions to our system easily.

3 Experiment
To evaluate an interface of our system mainly, we use human subjects and make an evaluation examination. We use 2 systems, 8 texts and 18 subjects. One of the systems is DL-MT with PU-W and other one is DL without PU-W. Eight texts are selected from a Japanese examination book and Japanese newspapers each 4 texts. We attached two types of exam questions to all texts.1 18 subjects consists of three regions by

1The type one question is a relevance judgment question. 5 exam questions which are written about the text are shown to a
the difference of the similarity with Japanese and each subject's native language; K1 is a Chinese native class, K2 is a Korean native class and K3 is a class of other languages. They are also divided into three stages, L1, L2 and L3 according to their Japanese skill degrees. The subjects are required to read texts and to answer exam questions. We also record time for finishing the task, logs for using PU-W by each subject and logs for clicking words by each subject. All subjects are also required to answer questions about the system. The results are shown as table 1 and table 2.

In table 1, 'cor' and 'time' indicate the average score of the subjects and the time required for the task respectively. 'act' means the average number of the information reference actions by clicking words or using PU-W. About time, there is no significant difference between DL' and DL-MT. About scr, DL-MT are higher than DL' in K1 and K3 group but in K2 group, the result is upset. However the differences of the results are not enough to be significant. About act, in all three groups DL-MT has higher numbers than DL' has.

From these results, it is difficult to say that the difference of interfaces between DL-MT and DL' will affect the subjects to read texts. However it can be considered that the interface of DL-MT can stimulate the subjects to refer a lot of information about the texts. We expect the reason why PU-W interface in DL-MT is easier than click to refer information.

Table 2 shows the results of the question about PU-W. All of the subjects in K3 group answered 'good.' In the contrary, each three subjects answered 'no good' in K1 and K2 group. The main reasons of 'no good' as follows; 'It feels obstructive because PU-W appears soon when the mouse cursor is put on a word,' 'It feels inconvenient because PU-W disappears before the content is read when the mouse cursor is moved out from a word,' 'It feels that eyes are tired.' The main reasons subject and the subject is required to judge if each description is correct or incorrect to a content of the text. The type two question is a selecting answer question. 2 exam questions which have 4 selections each are shown to a subject and the subject is required to choose correct one.

In this examination, subjects in this class are from Poland, Germany, Russia, and India.

- to say good as follows; 'It is possible to be able to read no separation of eyes from the text,' 'It is easy to use just put on the mouse cursor on a word.' From the results, it seems that the value of PU-W depends on the user. Especially in our current implementation, reading support information is shown in English in PU-W. Therefore, the user who is familiar with English tends to feel good for PU-W.

4 Conclusion

In this paper, we described a design for our system for Japanese reading support. We also presented the result of preliminary examination to evaluate an interface of the system. From the results, it can be said that our current system helps the learner because the many subjects reference much information provided by our system. We also compared PU-W and non PU-W. There is no significant difference between two interfaces at times and scores. However many subjects who use PU-W referenced information frequently. Therefore, PU-W will be more helpful than the non PU-W.

As a future work, we should extend the system which can be able to show much information with a good interface for each learner flexibly.

Acknowledgment

A part of this research has been subsidized by the Telecommunications Advancement Foundation.

References