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Presentation Reconstruction Method for Peer Review Support in Presentation Rehearsal

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Abstract: We have proposed a computer assisted peer review in a presentation rehearsal. In order to help the peers review the presentation, it reproduces the presentation mainly with the information embedded in the visual slides. However, the presenter generally uses not only the slides but also oral explanations in the presentation to transfer his/her knowledge and opinions to the audiences. The reproduction is accordingly inadequate for the peer review due to the lack of the oral information. This paper discusses how to reproduce a presentation with the slide and oral information.

Keywords: presentation rehearsal, peer review, support system, slide contents, oral explanation

1. Introduction

Presentation is one of knowledge communication, in which a presenter generally transfers his/her knowledge and opinions. It is recently conducted by means of presentation software, such as "PowerPoint" or "Keynote", on laptop computers. We have proposed a presentation rehearsal support system (Okamoto and Kashihara, 2007), and have developed and tested the system in these seven years.

Presentation rehearsal gives a presenter an opportunity to refine his/her knowledge with review comments obtained from the peers. However, it is not easy for the peers to make comments while listening to the presentation. To address this issue, we have proposed the "time-shifting method" in which the peers could make their comments after the presentation with the slide data and presentation movies etc. (Okamoto and Kashihara, 2007). In this method, the presentation is reproduced mainly with the information involved in the slide. However, the reproduction seems insufficient because it does not use the information included in oral explanations. In order to get the peers' comments that are fruitful for improving the presentation, it is necessary to reproduce the oral information in addition to the slide information.

There are a lot of related works on methods for supporting presentation. Shibata, Kashihara and Hasegawa have proposed the method for creating the presentation slides with the semantic structure embedded in a presentation document (Shibata, Kashihara and Hasegawa, 2012). Noguchi et al. have also used presentations for educational materials of meta-learning (Noguchi et al., 2010). Berena et al. have developed a system for online presentations (Berena et al., 2010). However, these methods mainly use the slide information to reproduce the presentations, and have little concern about the oral explanations. The oral information is just recorded as video movies at the most.

In this paper, we propose a method of the presentation reproduction, which uses slide contents and oral explanations. We call it "Presentation Reconstruction Method", in which the presentation is divided into slide contents and oral explanations and is then reconstructed by making the correspondence between the divided contents and explanations. In the following, let us describe the method, a tool for reconstructing the presentation, and case studies with the tool.

2. Issue of Review Support in Presentation Rehearsal

Presentation rehearsal is a kind of peer reviews, which helps the presenter to improve his/her presentation skill through the review work by the peers. The peer review also allows the presenter to be aware of an insufficiency or an incompleteness of his/her knowledge (Kashihara and Hasegawa, 2003). Thus, review comments from the peers are essential for the knowledge refinement.

In order to support the presentation rehearsal, we have developed a peer review client with visual-oriented annotation method (Okamoto, Watanabe and Kashihara, 2013), a back-review client for supporting a revise work of the presentation (Okamoto and Kashihara, 2012), and so on. The system can reduce cognitive load on review work and help the presenter to revise the contents of the presentation. The system also utilizes textual information in the slides to reproduce the presentation. Although it has just recorded the presenter's talk as video movies, it has not utilized the oral information for the presentation reproduction.

Through the test use of the system, we found that the system had difficulties in facilitating the peer review in the following two cases. The one was the case where the presenter gave supplemental explanation about the information that was not included in the slide. The other was the case where the information described in a slide was omitted in the oral explanation. The result of review comments from the peers accumulated in the system, in addition, suggests that 19% of the comments are related to oral explanations (Okamoto, Watanabe and Kashihara, 2013), which cannot be ignored for supporting the peer review.

In order to obtain instructive review comments from the peers, it is important to allow them to review the presentation appropriately with the information accumulated by the system. We accordingly attempt to use the oral explanations in addition to the slides to improve the previous approach for the presentation reproduction and try to. The issue addressed here is to reproduce the presentation with the slide information and the oral explanations adequately.

3. Reproduction of Presentation

The reason why oral explanations have not been utilized in our study is a technical difficulty of accumulation of the oral explanations as text data directly. In this study, at first, we had considered how to handle the contents of oral explanations.

3.1 Conversion of Oral Explanations to Text Data

Primarily, we focused on a voice recognition technology. Recently, services with the voice recognition, such as "Siri" and "Google Voice Search", become common. In a scene that is required real-time property like a presentation, it is ideal to use the voice recognition. Though, in the present technology, it is difficult to deal with continuous speech recognition. According to the experiment in Kawahara, the rate of the word recognition in a 90 minutes lecture in Japanese was 70% on average, and he reported that the modification of the recognized text was necessary to use as the captions (Kawahara, 2013). For this reason, it is not practical to utilize the voice recognition. Thus, we decided not to use the recognition method to convert oral explanations to text data.

Secondly, we focused on presenter notes. A presenter which has little experience in a presentation frequently writes a script in the presenter notes. A cost to convert the oral explanations may be reduced with a text in the presenter notes. Therefore, we tried to use the presenter notes. If the contents of the utterance which is not described in the presenter notes includes in the presentation, we convert it manually.

3.2 Method of Presentation Reproduction

Assuming that it is possible to convert oral explanations to text data as previously mentioned, we examine how to reproduce a presentation with two types of data. We focused on correspondences between oral explanations and slide contents. In general, a presenter makes a presentation projecting slides supplementary and explaining what he/she should to talk. Therefore, for example, in the case of reading slide contents, it is possible to link between the oral explanation and the certain point of the

slide contents. By revealing the correspondences between the slide contents and the oral explanations, the review work is supported in the following two points.

- Comprehension of a structure in a presentation
- Collective review both of the slide contents and the oral explanations

According to the above reasons, the load of the review work by peers should be reduced.

4. Presentation Reconstruction Method

Based on the discussion in chapter 3, we considered the specific method of the presentation reproduction. There are two processes, “dividing” and “combining”, for the reproduction. In the process of “dividing”, the slide contents and the oral explanations should be divided into certain grain size to make clear a target for linking. In the “combining” process, the divided contents, which were transferred to peers at the same time, are linked as appropriate. And, finally, linked contents are summarized into one combination as a presentation sequence. In this study, the above method of the reproduction is called “Presentation Reconstruction Method”. The schema diagram of the presentation reconstruction method is shown in Figure 1. The details of two processes are as follows.

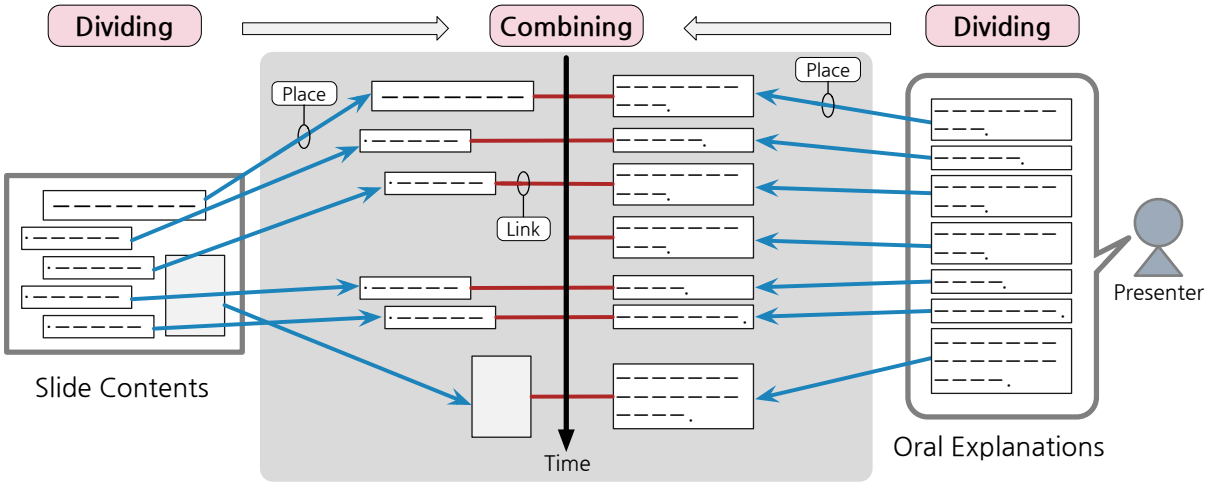


Figure 1. Schema of Presentation Reconstruction.

4.1 Dividing of Slide Contents and Oral Explanations

To elucidate how a presenter described in a certain slide, it is necessary not just to divide a presentation by slides but also to divide the slides adequately. We defined a means of the dividing as follows.

(1) Slide Contents

A slide is basically constructed of a title and a body part. Thus, the slide is divided these two. And, the body is constructed of texts, figures and tables. A text is generally described in the form of a bulleted list, and an item of the list is a smallest unit which has a set of a lexical meaning. Therefore, the texts are divided in each item of the lists. The figures and the tables are divided into some areas in an optional way. These divided slide contents are collectively called “slide elements”.

(2) Oral Explanations

At the time of dividing oral explanations, it is desirable to divide the explanations depending on a quantity of the slide’s text. Because an item of a bulleted list often corresponds to a sentence in the explanations, the explanations are divided into each of sentences. We collectively call these divided explanations “oral elements”.

4.2 Combining of Divided Elements

In the next step, the divided elements are combined. The following are procedures to combine the elements.

(1) Place slide elements and oral elements separately in time-series order
(2) Link slide elements and oral elements that are transferred at the same time

Actually, the presenter often explains about two or more items of the bulleted list in one sentence, or explains one list in several sentences on the contrary. In order to show a correspondence between slide elements and oral explanations clearly, it is desirable that each of elements has one-to-one correspondence. Therefore, in the former, the oral element is divided additionally, and the divided elements are linked to their respective slide elements. In the latter, the several oral elements are joined together, and the element is linked to a slide element.

5. Development of Presentation Reconstruction Tool

We have been developing a presentation reconstruction tool. The tool works on “Mac OS X”, and it supports “Keynote”. Presently, the tool is developed independent from the presentation rehearsal support system. An interface of the tool is shown in Figure 2.

The tool is equipped with an automatic dividing function to parse slides’ data and presenter notes in Keynote file. The function almost works well in dividing of bulleted lists and oral explanations. Each of divided elements is displayed on “slide view” or “oral explanation view”. The location of the each slide element in a slide is drawn in a red rectangle. The oral elements are displayed as a shape of a balloon and listed vertically in the right side of the window. At present, the view of the elements depends on the layout of slides, namely, the elements is not completely listed along time sequence. Thus, we are planning to change the design of the view.

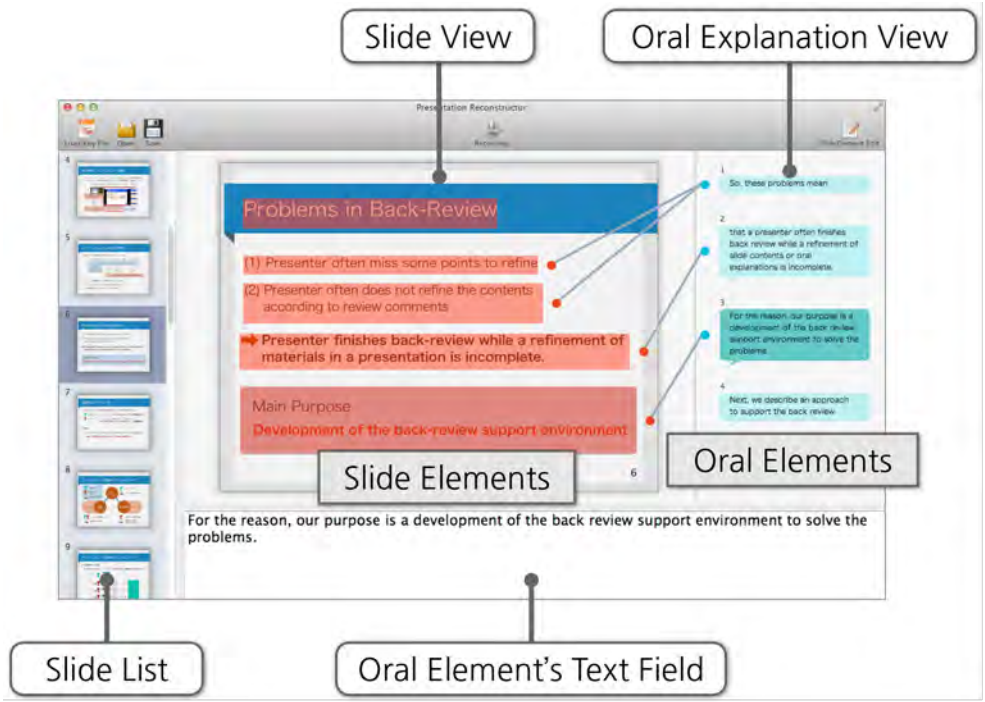


Figure 2. Interface of Presentation Reconstruction Tool.

After loading Keynote file, the elements are already displayed in a divided state. After that, a user performs following three types of works in sequence.

(1) Editing of Oral Elements

Because texts in presenter notes are different from each utterance in an actual presentation, the tool has a function of editing the oral explanation's text. The user selects an oral element in the "oral view", and adds, deletes or corrects the text of the element in the "oral element's text field".

(2) Additional Dividing of Slide Elements

The automatic dividing function for figures and tables are not supported at present. For this reason, the tool is equipped with a function to divide the figures or the tables into the slide elements manually. To divide the contents, the user can select a certain point where he/she wants to specify as a slide element with rectangle selection.

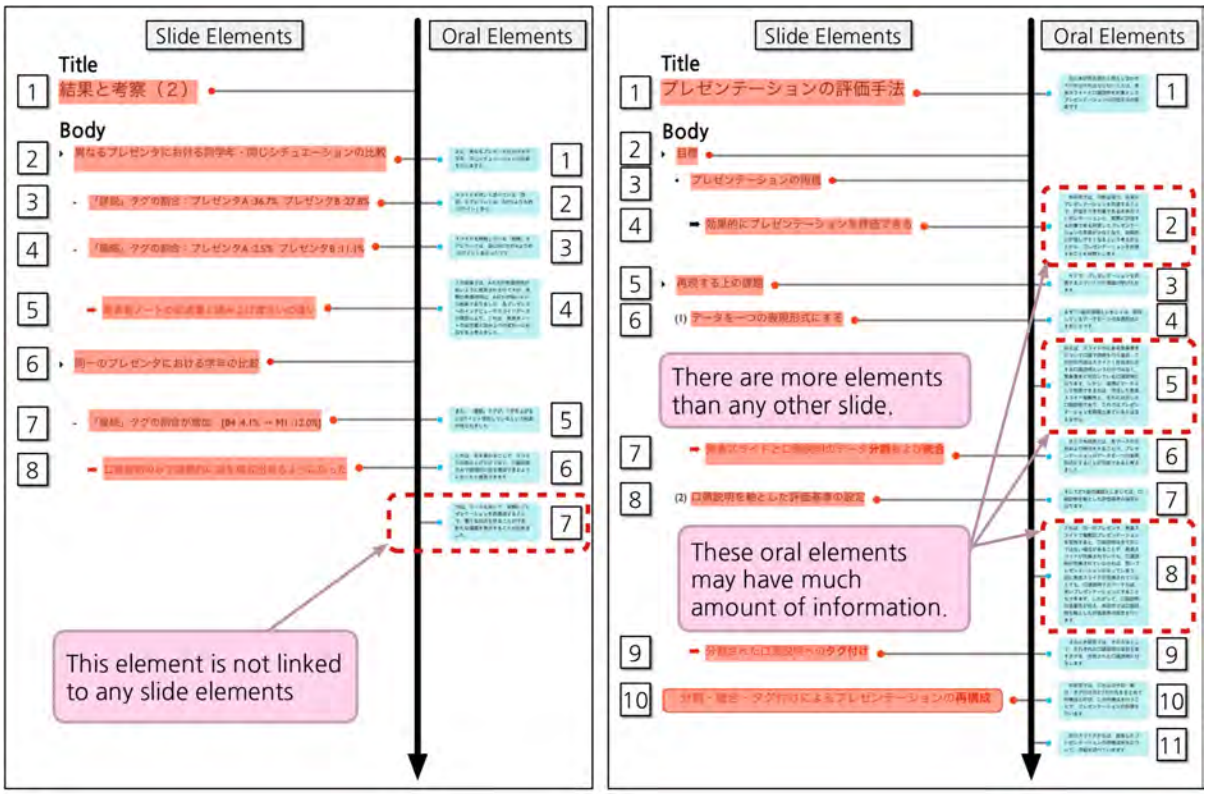
(3) Combining of Elements

The user makes a link between a slide element and an oral element to drag each other. A relation of the elements is drawn as a connected line.

6. Case Study

For the test use of the tool, we have reconstructed and analyzed six presentations which were accumulated by the presentation rehearsal support system. In this chapter, we introduce a case of the rehearsal for the presentation of a graduation thesis by an undergraduate student. Figure 3. shows parts of the reconstructed data in the presentation. An expression of this figure is modified from the data in the tool to make easy to see the relationship between the elements.

In the case A, a user can see the timing that these elements transferred and the amount of each oral explanation which is connected to the corresponding slide element. Also, the 7th oral element in the slide is not linked to any slide elements. It means that the element was transferred only by the utterance. In consequence, the reconstruction of the presentation shows the information that has not been visible so far.



Case A Case B

Figure 3. Relationship between Slide Elements and Oral Elements

Table 1: Aggregate Results of Elements in Presentation by Undergraduate Student.

	Number of slide elements	Number of oral elements
Case A	8	7
Case B	10	11
Average in all slides	6.0	5.9

In the case B, according to Table 1., the number of the elements in the slide is more than any other slide. Actually, in the rehearsal, a peer made a comment "*This slide has much amount of information. And also, there were too many contents explained only by the oral explanation. So, I didn't comprehend the details.*" This means that the number of the elements substantiates a reason of the comment. There is a possibility to evaluate presentation by an aggregate of the elements because contents of slides and oral explanations are divided into elements by the reconstruction.

7. Conclusion

In this paper, we described a presentation reconstruction method by dividing and combining of slide contents and oral explanations for a presentation reproduction. And we developed the tool based on the consideration. Through the case studies, the tool almost works well. As our future work, we add the function of the tool into the presentation rehearsal support system, and conduct experiments with the system in actual rehearsals. As mentioned earlier, about this time, we used presenter notes to convert oral explanations to text data, and we manually converted the explanations which does not include in the notes. In the method, a user can confirm a presentation after the rehearsal. Though, the user cannot confirm the presentation instantly in the rehearsal. Therefore, it is required to further consider the method for the conversion of the explanations. Also, we would implement additional functions which are not implemented in the current tool yet.

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