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Trial Development of A Peer Evaluation System of Presentation Skills Using Web

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Abstract: Presentation skills have recently become essential in many business situations, and a number of tertiary educational institutes have introduced presentation activities into classes. Feedback from the audience is very important in the development of individual presentation skills, but a speaker and an audience do not always have enough time available to watch and evaluate the presentation. Consequently, we have developed a system to improve presentation skills by using the Web. Presentation videos uploaded to the Web site enable peer evaluation, and analysis of video sound can evaluate speech rate and pause information. In this system, a user can not only see the evaluation or the reviews of his/her presentation by other users and features of his/her speech, but can also realize the process of improvement of his/her presentation skills by repeated practice or modification. Enhanced presentation skills are developed because the learner can practice through understanding the variations in the evaluation of his/her presentation in graphic form. We have assumed that the learner is a student who is practicing for a presentation of his/her study, and the reviewers are peers or his/her adviser.

Keywords: Presentation skill, Web, Video, Peer evaluation, Speech analysis

Introduction

Recently, presentation skills have become essential in various business situations, and a number of tertiary educational institutes have introduced presentation activities into classes. Feedback from the audience about content, visual aids such as slides, voice, and other aspects of performance is very important for developing presentation skills. Furthermore, a presenter must rehearse repeatedly in response to the feedback, if his/her presentation is to be improved. Repeated rehearsal and review from advisers or peers is particularly important for students or beginners. However, it is often difficult for students and reviewers to find enough time to watch and critically evaluate the presentation.

As a result, several systems that provide feedback efficiently from audiences have been introduced to assist in the development of presentation skills e.g. [1]-[4]. The systems developed by Yamashita et al. [1] and De Grez et al. [2] enable presenters to view audience evaluation immediately, in some graphic form of data sent by response devices. Miyawaki et al. [3] and Shibasaki[4] developed systems that can distribute presentation videos and can send reviews of presentations, to make the review process more efficient. However, although learners can get feedback from audiences in these systems, it is not easy for them to recognize how much their presentations have been improved by repeated practice.

Conversely, according to Yamashita et al. [5], using good presentations as models helps learners become aware of improvement in their skills by self-learning.

As described above, the goal of this study is to develop an e-learning system with four presentation-training functions, as follows:

1) Watch presentation movies, input reviews from peer evaluation and display evaluation results in a graphic form.
2) Automatic evaluation of presentation speech by sound analysis.
3) Display presentation history as thumbnails and show variations in evaluation using graphics.
4) Search for good presentations and watch them.

The aims of the above functions are: 1) improving efficiency; 3) identifying and understanding learning effects; and 2) and 4) supporting independent learning. Functions 2) and 3) are particular features of this system. Function 2) evaluates vocal performance from different perspectives. A presentation is not valuable if it doesn't interest the audience, even if its content may be important [6], so we have also given priority to improvement of speech. In addition, a higher learning effect can be expected by using functions 3) or 4). In this paper, we describe a prototype system in which functions 1) to 3) have been implemented and tested.

1. System Outline

1.1 System Configuration

The system configuration (Figure 1) consists of a Web server and several client PCs. Apache, PHP and MySQL are installed on the Web server, and the MySQL database is used to manage user information, video files, and evaluation data. In addition, the server uses FFmpeg [7] for video conversion or extraction of speech sound from the video, and uses Julius [8] as a speech recognition (SR) engine for automatic evaluation of speech. The client PC for the learner or reviewer requires a web browser with a Flash player. The learner also needs a video camera or software that can convert his/her presentation into a video file such as Microsoft PowerPoint 2010.
We assumed that this trial system would be used within a limited network such as an intra-school LAN.

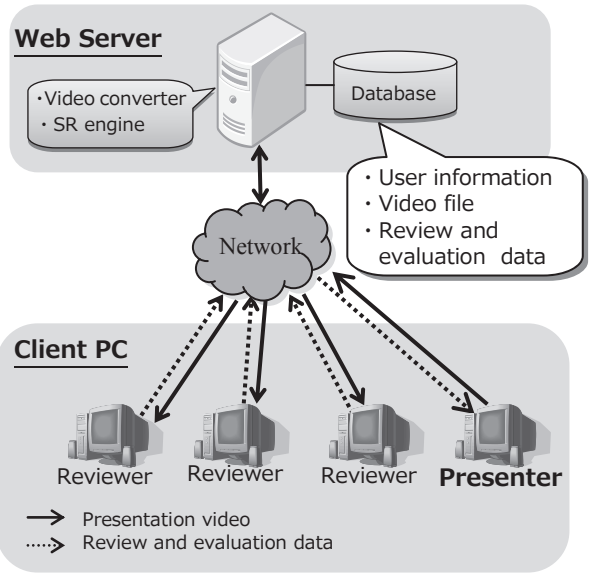


Figure 1: System Configuration

1.2 Using the System

The top page of this system (Figure 2) displays thumbnails linked to video files uploaded by users. The sequence of usage for a learner and a reviewer are described below.

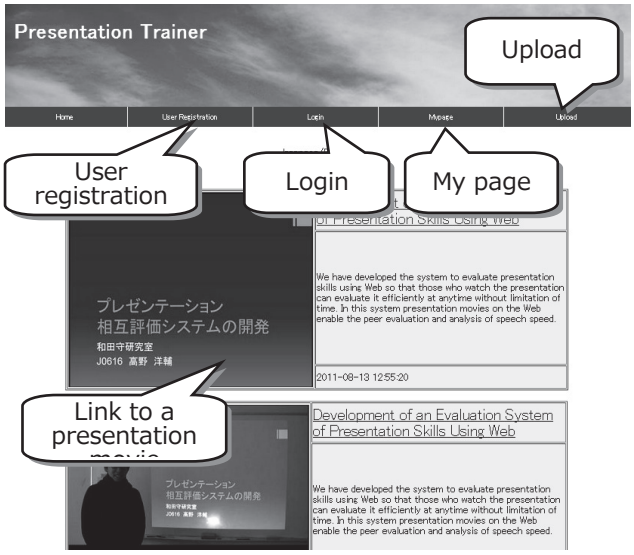


Figure 2: Top Page

After login, a learner selects "Upload" on the top page, and the upload page shown in Figure 3 is displayed. The learner selects a video file, inputs the information required, and uploads it by clicking the "upload" button. The learner then accesses "MyPage" to see the evaluation of his/her presentation. Since we assumed that there will be multiple rehearsals for a presentation event, video thumbnails are displayed separately for each event. For example, when four presentation videos for the interim report on his/her graduate study are uploaded, the four videos are displayed with dates, as shown in Figure 4. The evaluation of these videos is also displayed in graphic form on the left of Figure 4, in time order. This enables the learner to recognize how repeated practice or modification has improved his or her presentation. In addition, by clicking on the presentation image on the right of Figure 4, the learner can understand the detailed evaluation of his/her presentation, by access to the page to watch the video and to see the evaluation. It is assumed that the learners are college students or beginners.

After login, a reviewer clicks on the selected video from the thumbnails of presentation videos on the top page, and accesses the “Watch and Review” page as shown in Figure 5. Before watching the video selected as described above, the reviewer must click the "Create your review" button to display the page for input of comments and rating as shown in Figure 6. After the window appears as a separate display, the reviewer can watch the video, and

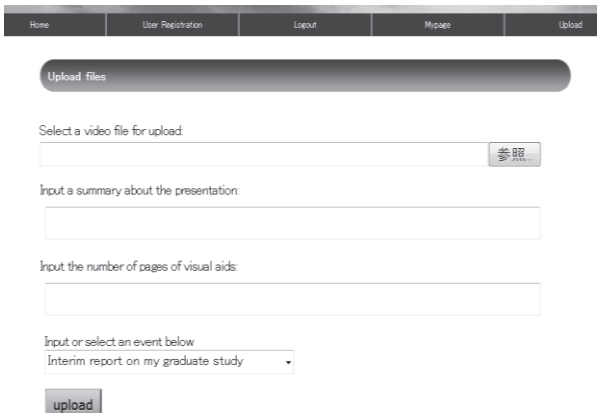


Figure 3: Page for uploading a Video File

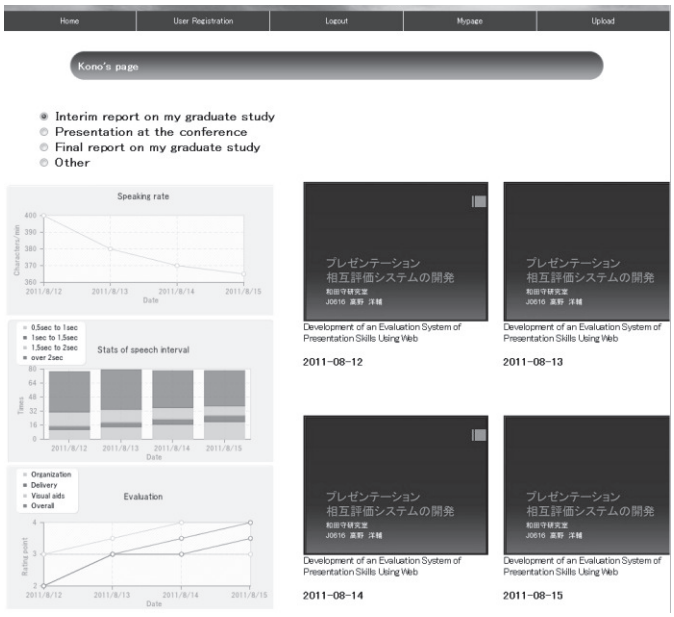
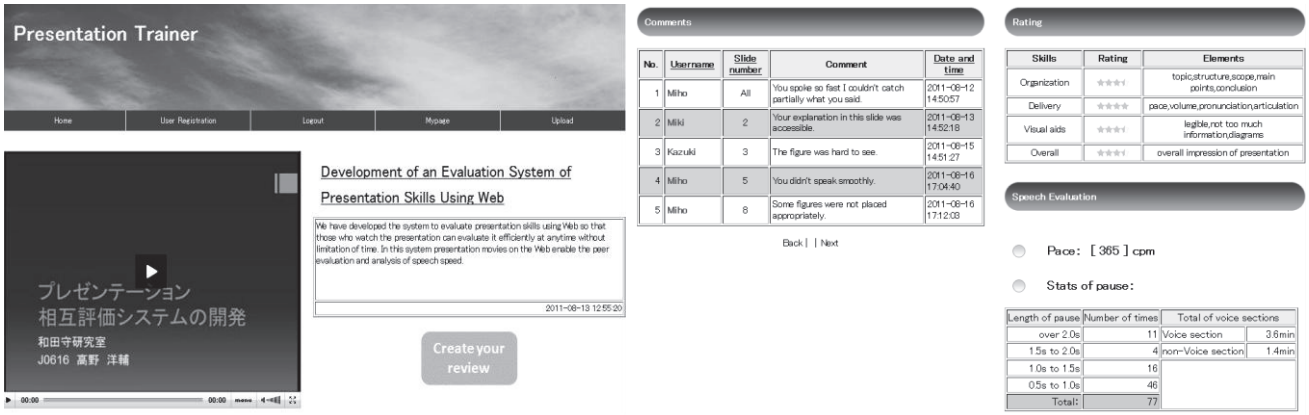


Figure 4: My Page



(a) Upper part of the page (b) Lower part of the page

Figure 5: Page for watching and reviewing a video file

input comments in parallel. He/she should input the comments about the presentation slide or speech and use the five-grade rating of the evaluation items, as described in the next section. The evaluation results are saved to the database and the presenter's "MyPage" is updated. It is assumed that the reviewers are peers or advisers of the learner.

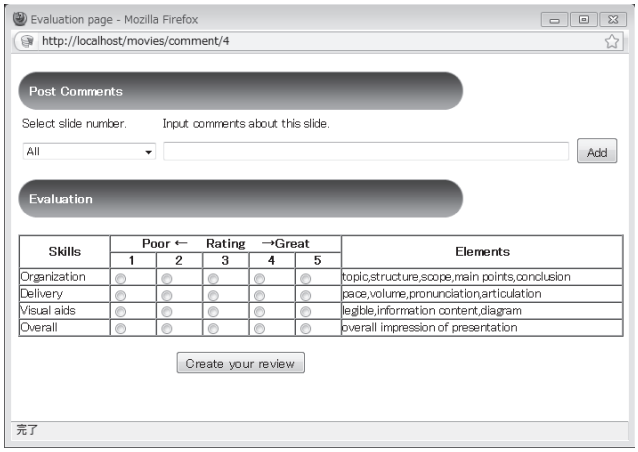


Figure 6: Page for inputting comment and rating

2. Evaluation of Presentation

2.1 Peer Evaluation by users

Reviewers can evaluate the presentation slides or speech by inputting comments for a specific slide number, as shown in Figure 6. Overall evaluation or advice for a presentation is input when "All" is selected. In addition, reviewers should give a rating of their impression of the presentation, using the 5 tier rankings as at the bottom of Figure 6.
In this system, four elements of presentation have been selected for rating: organization, delivery, visual aids and overall impression. A feature of the system is that a learner can understand the effect of his/her own learning efforts by seeing the variation of evaluation. In the future we will consider additional evaluation elements to increase the learning effect or motivation of learners, and will add or modify these elements within the system. Although reviewers can make evaluations at a time convenient to themselves, the input is time consuming. Consequently, improvement of user interfaces will be needed to make them as efficient as possible.

2.2 Evaluation by Speech Analysis

One of the main features of this system is that it can analyze speech sound and calculate speech evaluation data automatically. This enables the learner to gain not only a subjective evaluation from reviewers, but also objective data. Although there are many potential elements to speech evaluation, for this system only simplified methods of speech rate and pause information were adopted.
First, we will explain the speech rate calculation method. Speech rate is an important element affecting comprehension of the audience. In this system, we use a calculation method in which we suppose the number of characters (average) in Japanese per minute, as speech rate by SR using Julius. Slow speaking rates do not necessarily result in good audience comprehension. However, by comparing their performance with other presenters or by understanding the variation in their speaking speed after practice, creates learner awareness. Furthermore, when speaking speed is extremely slow, speakers should question their articulation, because the number of characters by SR is much reduced below the actual rate if articulation is indistinct. While it is difficult to calculate speech rate correctly, it has potential in evaluation of articulation. It should be noted that, at present, the evaluated speech rate cannot be displayed for each slide, as it is calculated as an average value over an entire presentation. Therefore, we will implement some functions such as synchronization between evaluation and a presentation video in the future system. This will provide more detailed information.

Second, we will explain the method of calculating pause information. Pausing is an important element if the audience is to understand the presentation, and presenters sometimes use pauses intentionally, to attract the attention of the audience. Therefore, it is important to understand how pauses are made in a presentation whether they are for comprehension or to gain attention. In this system, pause information has been classified into four intervals: 1) 0.5 - 1.0s, 2) 1.0 - 1.5s, 3) 1.5 – 2.0s and 4) over 2.0s, and the statistics of non-voice sections throughout the presentation are displayed. This does not provide direct clarification of whether the speech is good or bad but a learner can understand the variations in their pause patterns during repeated practices for an individual presentation event. This means that a learner can understand from his/her point of view whether they speak fluently or not, and whether they are using pauses effectively. We will improve the system to create synchronization between pause information and slides or speech sound.
Additional improvements will include incorporating evaluation criteria such as volume and intonation to increase the learning effect, since at present only speech rate and pause information are available.

3. Training Methods of Presentation Skills

We will describe the presentation skills training methods to be realized.

3.1 Being Aware of Learner's Own Ability

First, after uploading his/her presentation video to this system, a learner becomes aware of his/her presentation ability by seeing the reviews from other users, and the objective speech analysis of his/her presentation. Although interactive discussions between a presenter and the audience are more effective than one-way evaluations by the audience, in this system we have adopted the method of comment input regarding presentation or slides on the Web, to reduce the burden. Reviewers can add comments piece by piece at their convenience, and may input only the five-grade rating if they do have not enough time to complete the entire evaluation. This should result in a presenter getting more reviews or ratings, but it is still difficult to review sufficiently. Furthermore, although it takes considerable time to re-evaluate whenever presentation videos are uploaded, a learner can see only evaluation by speech analysis when uploads are repeated.
As described above, the learner should become aware of their individual presentation ability and understand the points to be improved.

3.2 Repeated Rehearsal and Improvement

After the learner has recognized the areas for improvement, they should practice or modify their presentations based on those points. Specifically, the content or organization, modification of slides, and speaking practice should be reconsidered. Following that, the learner should rehearse again, record his/her presentation and upload it to the system. It is then re-evaluated, and the evaluations are added to the graphs on his/her "MyPage". After practice or modification, the learner can then understand what has improved compared with their previous presentation, so that they can make use of that during the next rehearsal. The system thus increases not only effective learning, but also motivation.

3.3 Following Model of Presentation

Comparison with good presentations is useful in that a learner has a model to follow. In this system, a user can view videos of other users and can see their evaluations. The user can also follow the history of a presentation, which has gained a good evaluation on features such as the design of slides, use of diagrams and speech. This helps him/her to consider the points for improvement after understanding the evaluation of his/her presentation. However, a search function for uploaded presentations needs to be added to the system in the future.

4. Conclusions

We described the trial system in which a user can develop his/her presentation skills efficiently by peer evaluation of presentation video and by speech analysis on the Web. This system helps a learner to practice and modify repeatedly seeing the effect of his/her own efforts. Furthermore, a learner can also refer to other users' presentation to improve his/her presentation. We will improve the system to be more useful for such aspects as speech evaluation, how to input reviews or evaluations and a search function for good presentations. In the future, we will conduct experiments to evaluate this system and improve its usability.

Acknowledgements

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