

Presentation Support Software Using Mobile Device For Interactive Lectures

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Abstract: We developed a software to support PowerPoint presentations with mobile device. The software enables users to refer to the thumbnails of the slides, jump to a particular page, draw annotations directly on the slide during the presentation, and distribute annotated slides as an integrated PowerPoint file. Our goal is to enhance PowerPoint-based lectures making them more interactive with this software. We describe the features of the software and the result of a first evaluation as an initial progress toward our goal.

Keywords: Android, Mobile Device, Lectures, PowerPoint, Presentation

Introduction

Microsoft PowerPoint is nowadays greatly-wide spread over the world, and used for business and education. Many presentations are performed with equipped fixed PC or laptop PC on desk. In such a situation, a presenter can use following support tools:

- Presenter View, Built-in feature of PowerPoint. It helps user to control slides by thumbnails. A presenter can also perform presentation, viewing notes at the same time.
- Tablet, a computer input device and PowerPoint pen tools. User can write annotations on a slide in the similar way as to draw images with a pencil and paper.
- Wireless controller. Presenter can turn over slides remotely.

Since these tools are not integrated, it is difficult to use all features remotely at the same time. Therefore we have developed software which allows a presenter to use above features with a single device with PowerPoint. By using this software in lectures in colleges or universities, we expect increase of interactivity in lectures as follows:

- A lecturer can walk around a room and perform lecture interactively while getting students' attitudes.
- A lecturer can draw annotations instantly from anywhere in a class room. For example, underline important sentences in order to emphasize them or write answers for the questions from students.
- Students can refer to the PowerPoint slideshow file with annotation after the lecture by downloading via web.

We aimed to develop the presentation support software mentioned above and performed an evaluation.

1. Related Work

Pebbles Project[1] has introduced SlideShow Commander Application. With this software users can handle PowerPoint presentations remotely with Palm or Pocket PC. However, this software does not

enable users to refer to thumbnails in order to jump to a particular page, nor to save annotations as an integrated PowerPoint Presentation file.

Pen-based presentation tool Kotodama[2] is a presentation software which enables users to perform authoring and presentations with pen-based computers. The authors showed that pen-based interface is easy to handle even for inexperienced computer users, and the feature to edit the material by simple handwriting and change the flow of the presentation on the fly is significant, through a practical user study in elementary, junior-high and high school classrooms.

2. Software Description

Architecture

This software consists of a server software and a client software. Server software works as a PowerPoint 2007 Add-in, which was implemented in C#, and runs on .NET Framework 3.5 or later. Client software is implemented in Java and runs on a mobile device with Android platform 1.5 or later. They are connected each other by TCP through a wireless network.

Key Features

This software has the following 3 key features:

1. Draw annotations on slides. When we write down a text, or draw marks and underlines on the device's LCD with stylus pen, they appear on the slide on a screen immediately. Those annotations remain in the slide after the presentation is done. The user can save, print and distribute them for the audience. (Figure 1)
2. Refer to thumbnails of slides, and turn over any pages easily. It can be done anywhere in room while showing slides. (Figure 2)
3. Refer to notes of slides on the device. We no longer have to look at notepad while walking around the room.

Furthermore, users can flip slide pages remotely and see the time of presentation.

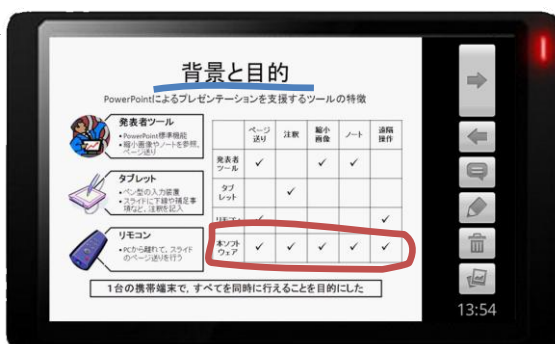


Figure 1. Screen for referring to the slide, and writing annotations on the slide



Figure 2. Screen for referring to the thumbnails of the slides

3. Evaluation

Eight graduate students of Tokyo Institute of Technology participated in an evaluation of this software. We provided a mobile device SmartQ5, which has 4.3" LCD and 480 * 800 resolutions with Android 1.5, laptop PC with Windows XP and PowerPoint 2007, and a projector. We prepared

2 slides, the first one on which was how to give presentation with slides for practice about the functionality of this software, and the second one was about how to use the features of this software in practice. The presentations consisted of 14 pages slides and it took approximately 10 minutes to perform. Table 1 shows the results of a post-questionnaire (Due to the restriction of pages, only some of the questions are shown). They were answered on a 1 to 5 Likert scale (5 is the best). Overall, the participants rated this software very positively. Basic interfaces, especially turning over pages, switching screens for referring to the slides and viewing notes, and simplicity of icons, ranked very highly. On the other hand, the speed of response while turning over pages and writing annotations did not rank highly. We have to improve the software, in particular, the performance of drawing and corresponding with a server. During an interview participants suggested desirable improvement of interface, such as referring to the slide and notes at the same time.

Table 1 Results for the post-questionnaire

Question	Mean	SD
Did you turn over pages using forward and back button as you intended?	4.3	1.0
Did you underline and circle words as you intended?	3.8	1.0
Did you write down words and numbers as you intended?	3.1	1.5
Did you think that presentations would be easier to understand by writing annotations, such as underlines and notes?	4.4	0.7
Did you view notes as you intended?	4.5	0.8
Did you think that you would be able to perform presentations more easily by viewing notes with mobile devices?	4.4	1.1
Did you find the layout of buttons (icons) appropriate?	4.5	0.5
Did you understand the meanings of buttons (icons) easily?	4.9	1.1
Did you turn over pages smoothly?	2.8	1.3
Did you write words and numbers smoothly?	2.1	1.1
Did you learn the usage of this software easily?	4.8	0.5
Did you find this software useful?	4.5	0.5

4. Conclusion

We have developed and evaluated a presentation support software using mobile devices. The software allows users to control PowerPoint presentation remotely, such as turning over pages, viewing notes, drawing annotations on slides, and referring to the thumbnails to jump to a particular page easily with a single mobile device. The evaluation showed that the software is significantly effective. We aim to make lectures with PowerPoint more interactive. In the future, we plan to perform evaluations with college lecturers. Moreover, we will perform further evaluation and improve this software taking into account the feedback from participants.

References

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