WebTracer: A New Integrated Environment for Web Usability Testing

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1   Introduction

Designing attractive Web sites is a crucial problem in business, since Web sites directly reflect the images and sales of companies (Goto & Cotler, 2002). Therefore, usability evaluation for web pages is now an important concern in finding flaws and shortcomings in the pages with respect to usability (Jakob, 1993).

A user's gazing point and the history of operation are used for many usability evaluations. However, efficient record or efficient analysis of these data are not easy. Then, we propose WebTracer which is a new Integrated Environment for Web usability testing.

2   WebTracer

WebTracer is an integrated environment for web usability testing. It can record user's browsing operations, replay the user's recorded browsing history, and provide analysis tools which can depict graphs and calculate statistical equations. WebTracer is optimized especially in the following two features.

WebTracer records the various user operational data needed for replay and analysis. Specifically, WebTracer records user's gazing points via the eye mark recorder, mouse movements and clicks, keyboard inputs, and the screen image of the browsed pages. Unless the appearance of the browsed page changes, WebTracer does not record browsed screen image. The image is captured only when a transition of the browsed page is triggered by a user's events (e.g. mouse click to follow the next links).

WebTracer can support usability testing by using a replay of the user's operations, summarized data, and graphs derived from the recorded data. By using the summarized data, we can capture the characteristics and statistics of each page, which helps with the analysis of a Web site.

Recorded data are summarized in the form of a table for every page. The data can also be shown in graph form. The replay feature reproduces user's operations, such as the eyemark and mouse cursors, operations performed when the page is being browsed.

Figure 1: WebTracer

3 Experimental Evaluations

We have conducted an experiment, to evaluate the effectiveness of WebTracer in a Web usability evaluation. In the experiment, we asked the subjects to find objective information within a company Website. Then, we compared 1) the size of history, 2) random access time, with other compression formats.

Table 1: Results of an experimental evaluation

	WebTracer	MPEG-2	MPEG-4	MPEG-4
Pixels	853 x 717	720 x 480	720 x 480	1024 x 768
Size of history	14.0MB	272.0MB	48.5MB	140.1MB
Random access time	1 sec	1 sec	1 – 2 sec	5 sec

4 Results and Conclusions

Results of an experimental evaluation showed that the size of the operation history taken by WebTracer was from 1/10 to 1/20 of the size of data recorded by an MPEG-2 and MPEG-4 format (Table 1). Thus, with its compact form, the result of usability testing with the gazing point can be efficiently shared. It is expected that we can easily share empirical data between researchers. Also, evaluators can easily send the testing results as a feedback to the developers.

References

Goto, K. & Cotler, E. (2002). Web ReDesign. Peason Education.

Nielsen, J. (1993). Usability Engineering. Academic Press.