Human Behavior in Speech Browsing the WWW

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ABSTRACT

A very important aspect of computer application development is the study of the behavior of users while they interact with the application. To do this, it is necessary to perform usability tests with human subjects. Observations taken from these tests help determine the most common actions performed by users. In this paper we discuss some aspects of a study of the use on speech for browsing the WWW.

1. INTRODUCTION

The World Wide Web is an information and communication system that has experienced a rapid growth since its creation. The large amount of documents on a broad scope of topics and different Web publishing techniques makes it difficult for users to browse the World Wide Web.

Speech input could provide present and future users a more natural way of interacting with the WWW. Motivated by this a group of researchers from the Center for Computing Research and Development at UPR-Mayaguez conducted a study of the use of speech to browse the WWW [Borges96]. In this paper we present some of the results of the study conducted with novice users.

2. ISSUES IN HUMAN-COMPUTER INTERACTION STUDIES

While performing tests, it is essential for the users to know the purpose of the tests and to feel comfortable during test time. When the user feels comfortable with the environment he/she can perform the test in a more natural way.

In most tests it is very useful to interview the users after they take the test. These interviews they reveal the problems they encountered during the test and their subjective satisfaction about the application used for the test.

Different patterns of behavior can be observed with different groups of users. Thus, the users should be carefully selected so that they represent the potential users of the interface.

3. SPEECH VS. POINTER INTERACTION TEST

The test consisted of three parts. The first part consisted of browsing a Web site by using only speech commands. The second part consisted of browsing a Web site by using only the mouse for interaction. In the third part users were free to use multimodal interaction, which is the use of any of the two interaction modes: speech or mouse.

3.1 Setting the Environment

The environment plays a very important role in usability testing. It should be set up before the user begins with the test. The number of people present in the test room should be the minimum possible in order to make the users feel more comfortable.

Before starting the experimenters it is important to brief the users about the test they will perform [Nielsen94]. The users selected for the test described in this paper were informed about the following:

- The tests are to study the browser, not the users.
- The software is new and has not been tested before, so problems can arise at any time.
- The users can stop the test at any time if they feel uncomfortable.
- The tests are recorded, and someone is observing the test from another room.
- The test results are confidential.

A pre-test training session was given to the users to familiarize them with the WWW and hypertext interaction.

3.2 Test Users

Eleven novice users participated in the test. A novice user is someone with no or little experience using WWW browsers. A questionnaire was given to the test users to determine which devices, programs, or peripherals they had used before. None of the users had previous experience with Internet browsers or speech input systems. Most of the users had used computer games and word processors and were familiar with the use of the keyboard and the mouse.

3.3 Observations

Novice users did not use some buttons or commands of the browser that are very useful in accessing information. These commands were the Open, Search, History, and Home. Most indicated that they did not use then because they forgot their functionality. Among the most used commands was the Back command, which was used even to go to the Home Page. Novice users interpreted the Home Page as an index for accessing the other pages. The Back command was self-explanatory and provided the novice users an easy way. The Up and Down commands were also widely used to move through the page.

While using the mouse for interacting with the program, many users did not go to the bottom of the page, although the scrolling bar indicated that there was more of the page to see. This was unexpected from users that had used windows interfaces before. A possible explanation could be that they did not have enough experience with Windows application to understand the behavior of the scrolling bar.

For the voice interaction part of the test, some users felt very shy about talking to the computer in public; they did not use speech for the multimodal part of the test. While using speech, some users called the link when it was visible and searched for them when they were not.

The results of the multimodal test showed that the large majority of users tend be biased for one of the two interaction modes and specified most of the commands using that mode (see figure 1).

Also, the users that had very little experience with the mouse used speech extensively, and some users with more experience using Windows and the mouse, used voice because they liked the innovation. Most of the users mentioned that speech was a very good alternative for people with little experience in the use of computers because it facilitates the interaction with the program.

User	Commands Issued (Percentage)	
	By Mouse	**By Speech**
1	6	94
2	5	95
3	0	100
4	0	100
5	95	5
6	44	56
7	100	0
8	100	0
9	100	0
10	100	0
11	24	76

Figure 1. Results of the Multimodal Test

4. CONCLUSIONS

The experiment revealed that novice users tend to avoid those commands whose functionality they do not understand. Some users felt uncomfortable talking to the machine, and other said that the use of speech was very useful for people with little or no experience using a mouse. In the multimodal part of the test some users used speech because it was easier than using the mouse. However, some users decided to used the mouse even though they thought it was the interaction was easier using speech. They preferred to use the mouse because it was faster or they did not want to talk at that time.

REFERENCES

[Borges96]   Borges, J., Jiménez, J., Rodríguez, N. "Speech Browsing the World Wide Web", 1996 (unpublished).

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