

User Perception on Intelligent Split Menu for Web Browser Data Entry

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Abstract—The notion of intelligent split menu for web browser is to demonstrate the experimental domain model that is associated with a user interface to improve data entry. A split menu becomes popular recently in computer application. Now, it is extended into the web browser for data entry purposes. The objective of this study is to investigate on user perception of integrating intelligent split menu on web browser data entry. Therefore, a prototype web browser model is used to embed the web browser model with a data model in order to gather feedback on the user perceptions. Results were mainly positive, as many are keen on the idea of having split menu and integrating it on the web browser. It shows how a web browser can be enhanced to be more useful to the users.

Keywords- *Intelligent split menu, web browser data entry*

I. INTRODUCTION

The technology shift has been so vast that it is impossible for us to catch up with it. The revolution of the World Wide Web has changed information distribution among people. One should consider human computer interaction elements in all aspects of computer interaction including web site interface. Besides, human computer interaction plays a major role in determining the usability of a website or web page. In this study, usability is how well we can achieve our goals in completing tasks or looking for information in web page.

It is proven that Graphical User Interfaces (GUI) such as menu bars, tool bars, and icons make a web page usable. GUI objects have a major function in determining the functions of the web page. Menu with selection-support offers user's faster access to frequently used functions. Well-designed selection-support menus facilitate learning for new users by offering a staged, guided path to support the discovery of available functions and useful resources [1, 2, 3].

In this paper, we study split menu functionality as data entry and navigation. According to Sears and Shneiderman [4],

split menu placed two or three most frequently selected items are at the top of the menu and then the remaining items in a bottom section. These most frequent items are placed at the top of the menu as a hot list items. In addition, he proposed arranging the most likely options for easy selection by the users. This list arrangement is known as hot list, where he believes it can enhance human computer interaction. Another type of list is Hotbox. Hotbox combines several GUI techniques, which are generally used independently: accelerator keys, modal dialogs, pop-up/pull down menus, radial menus, marking menus and menu bars. These techniques are fitted together to create a single, easy to learn yet fast to operate GUI widget. The reason is it can handle significantly more menu items than the traditional GUI menu bar. Sears and Shneiderman found users prefer to use split menu because it provides most frequently items on the top section.

In this paper, the research was to improve the current architecture of the web browser by implementing split menu and hot list into the web browser's address bar. The motivation is to improve the efficiency of data entry by exploiting the intelligent split menu.

II. BACKGROUND AND RELATED WORK

The most common place to find split menu is the Microsoft Office font selection such as Microsoft Word 2000 as shown in Figure 1; items for frequently used fonts are located above the separator, and all others are below the separator. Despite the trivial algorithm for inferring the top section, the Word menu has some excellent characteristics where the anticipation of user input is unobtrusive; user control is maintained and has a high hit rate frequency with which one of the hot list elements is selected.

According to Dong Sock Lee [5], he claims that these menus make it easier to select high frequency items by giving them priority over low frequency items. It encourages first time user to choose correctly. He evaluated how each menu item

caused a change in frequency distribution that the menu reflected changed. He altered the menu 2/3 to reflect a new menu distribution. In this experiment, the split menu has shown as the fastest overall performance menu implementation compared to traditional menu.

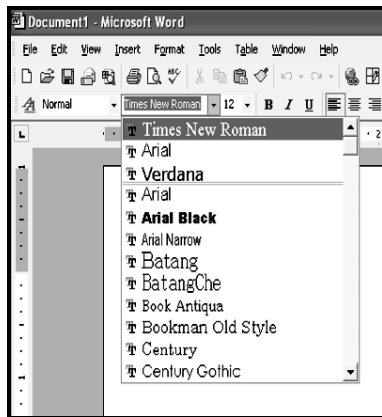


Figure 1. Split menu in Microsoft Word

Paula [7] showed between split menu, alphabetical menu and frequency menu, most users prefer split menu. Her first experiment of 73 individuals completing 12 tasks of choosing names was successful and showed adaptive interface is very important. It causes less error and completion time was faster which is better than static menu. In another experiment, she provided 100 tasks, the results shown split menu in terms of application were still the fastest but the same for error rate as her first experiment. Besides, Jim Warren [6] proved split menu to be a working product where top 20 lists for mouse click entry of ophthalmology diagnoses was the most used data entry method for doctors. The results were positive where the hit list is picked out all the time.

The users of the system found it to be more effective than the normal way of putting information [6]. For example, they have hot lists for RFE (reasons for encounter – symptoms, complaints, checkups and prescription). They believed the hot listing would minimize the typing done and maximize the ability to specify items from long lists with point and click methods. Moreover, it should be used in many applications.

In another research done by Mona Tom [8], she claims that split menu can be used in automobile multimedia application. Menu designs here is challenging because it has to be optimized so the driver can easily accomplish the desired task while controlling the vehicle. Menu interfaces for automotive environment must promote a rapid search and selection process where the user intuitively knows where to find and activate a specific menu item within the menu structure. During the horizontal motion, it is important that the cursor movement does not move away too much in the vertical direction and leave the parent item, which will close the sub menu [1, 9].

III. METHOD

The prototype of intelligent split menu is shown in Figure 2. In order to embed the split menu into browser, first it has to be adapted according to user's needs and goals. User models are used to represent information collected about the user whose needs and goals are to be determined. A user model is an explicit representation of the properties of an individual user; it is used to reason about the needs, preferences or future behavior of the user.

The information about the model is collected by indirectly infer a user's preferences or goals through their interaction with the web browser model. The design developed appropriate method to allow user views and modifies the information in the user model. Although this may add additional complexity to a system that is attempting to simplify tasks through adaptive techniques, there are substantial benefits where users will be better able to understand the system has automated actions and correct errors in the model that cause infuriating performance.

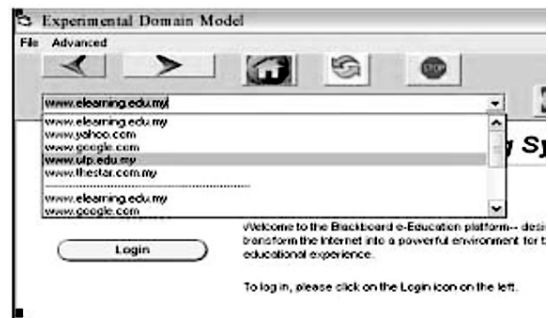


Figure 2. Split menu in Web Browser Model

A. Web Browser Model

A web browser model is a model which integrating an intelligent split menu on the web browser architecture. The split menu is applied on the web browsers address bar together with some basic functions such as stop, go, refresh, save and print.

The address bar is using dynamic drop down list. The top menu is the most frequently used address and the bottom ones are arranged in alphabetical order. To capture the data, a database, Microsoft Access, stores the address as entered by users. A counter is used to calculate the number of times user visiting a particular web site. In this model, the top five addresses will be listed as the hot list where it automatically arranges in the web browser inside the split menu.

B. Evaluation

The experiment was conducted at Universiti Teknologi PETRONAS (UTP), Malaysia. There were 50 students and staff involved in the end-to-end testing to evaluate the web browser model. The participants were then interviewed informally. After the interview session, they were required to fill up the evaluation questionnaires to justify their perception toward the web browser model. At the same time all the