

# VISUALIZING THE SEARCH RESULTS TO IMPROVE ACCESS TO LIBRARY RESOURCES

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## ABSTRACT

The main purpose of this research is to calculate performance of visualization methods through calculating the time lapse between search results display and access to the item and analyze the results statistically. In this study, three methods have been considered to help users: Viewing the book place in three-dimension, showing location of the book by color symbols and using graphic symbols.

## KEYWORDS

Library, Visualization, Three-dimensional models, Catalog searching

## 1. INTRODUCTION

One of the most important services that libraries offered is search services and access to resources, including books, magazines and other physical items. Today, most libraries have computer catalogs in which users can search by keywords and find related resources. In libraries with open shelves, for access to each item, the user should follow call numbers (whether LC, Dewey or other classification codes) through the corridors, bookcases and shelves signs.

Access process through the LC code usually is time consuming and in many cases, users are faced with problems. Lack of user familiarity with the environment of libraries also makes the problem more complicated. Prior to this research, some studies have been done in the field of using visual guides to increase search speed, but none of them have calculated the efficiency improvement. For example Xia (2005) in an article entitled "Locating library items by GIS technology " has introduced a mapping system to facilitate books access process in libraries using GIS technology. Or Li and Deng (2008) have introduced a system which shows users, the location of the books and the direction of movement for access, through several ways, in "Location and shelf mapping from OPAC search results". But none of them have assessed efficiency of visual techniques accurately in order to find out how these techniques can improve search process and access to books.

## 2. DESIGN OF EXPERIMENT

The Research was designed for Library of Iranian research institute for information science and technology. The library, which has over 15,000 books works as an open shelves library and gives services to the institute's faculty and staff.

To achieve the goals of this study, at first one book was selected from each bookcase randomly and the bibliography information was obtained by the library search software through its barcode and an Excel file was generated. The number of books that was picked as a sample group was about 110 books. All books were photographed by a digital camera and pictures were attached to the bibliographic information of the books. Except for limited numbers, bookcases have similar form. There are about 110 bookcases and each of which has six shelves. In the next step library environment, particularly the bookcases were modeled by

Google Sketchup software to form three-dimensional simulation and spatial information of books was recorded into the sample Excel file.

### 3. SOFTWARE ANALYSIS AND DESIGN

One of the main objectives of this study is to use the latest technological achievements to facilitate the search process. To achieve this goal, the latest versions of software and the best experts and advisors of programming in visualization field were used.

As previously noted, three-dimensional view of the library was designed using Google Sketchup. To control the three-dimensional view, the Adobe director 11.5 that is the latest version of the software was used. Director software offers this capability that components made by Sketchup could independently control. This feature is used to build three dimensions gaming software. These components in library three-dimensional model are bookcases and shelves. Director Software output was exported as a director shockwave file. Microsoft .NET 2008 was used to make main software that shows bibliographic information, three-dimensional view of library and the chain of symbols and colors.

### 4. SOFTWARE SPECIFICATION

Figure (1) shows designed Software Home page. At first by pressing start button one sample book will be selected randomly and bibliographic information will be displayed. User can press the video button to watch the animation of the library model. In this mode, three-dimensional image of the library revolves in such a way that target bookcase is easily visible and the bookcase is raised and positioned upper than their adjacent neighborhoods. The bookshelf is also highlighted in the three-dimensional image of bookcase which is positioned on the right side of the library model.

By pressing colors button, three color bars will be seen on the screen. User can track colors in the library to find the book's place. The first color shows desired corridor, the second color shows the bookcase and the third color shows bookshelf. By pressing the symbols key three symbols will be shown, that work as same as color bars. In this case, the user can also pursue symbols to achieve desired book.

Software automatically displays bibliographic information as user clicks the button and time will be calculated. When the user access the book and comes back on the table and press the stop button the counter will be stopped and stop time are will be recorded. Each record includes a series of user-related information and the mode which was used by the user.

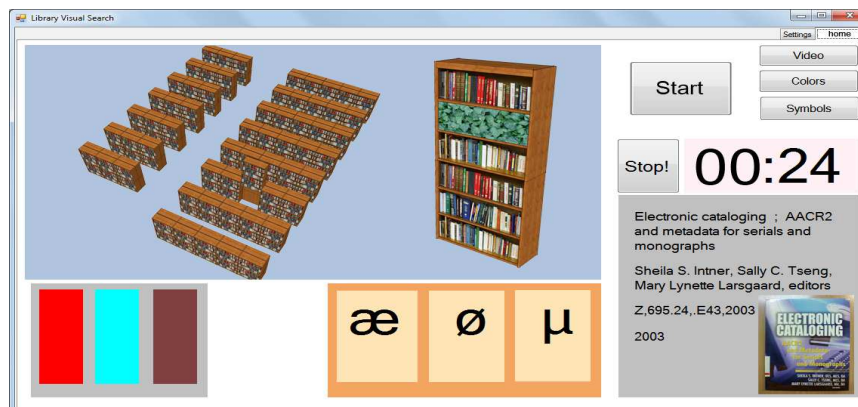


Figure 1. Software interface (Library visual search)

## **5. EXPECTED RESULTS**

In this study, 100 users will use the software to search for books in four ways. At first they will use only the LC code, in the second step three-dimensional view will be used, in the third and fourth steps, they will use symbolic and color guides. Everytime that user uses the software, a new sample book will be randomly selected.

Our hypothesis is that the speed of access using these methods will be higher and the use of three-dimensional video has the highest efficiency. Information obtained from the experiments will be analyzed by ANOVA technique.

## **6. FUTURE APPLICATIONS OF VISUALIZATION TECHNIQUES**

New technologies in software engineering domain have lots of simulation capabilities and can show the library as a virtual environment. These capabilities can be embedded in libraries collection management software and increase quality of their services significantly. The use of signs in libraries may change the face of future libraries and LC codes will be replaced with these signs in some cases. For example, in children libraries, use of these signs is very attractive in compare with the LC codes.

## **REFERENCES**

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