Proceedings of the First

University Journal of Research and Innovation

December, 2019

Organized by

University of Computer Studies (Pakokku)

Proceeding of

The First University Journal of Research and Innovation 2019

December , 2019

Organized by

University of Computer Studies (Pakokku)

Department of Higher Education ,

Ministry of Education , Myanmar

University Journal of Research and Innovation

Volume 1, Issue 1 2019

University Journal of Research and Innovation 2019

Volume 1 , Issue 1 , 2019

This journal and individual papers published at www.ucspkku.edu.mm.

Copies:110

All research papers in this journal have undergone rigorous peer-reviewed which is published annually. Full papers submitted for publication are refereed by the Associate Editorial Board through an anonymous referee process.

The authors of the paper bear the responsibility for their content.

Papers presented at the First University Journal of Research and Innovation(UJRI), University of Computer Studies (Pakokku), December 2019.

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Proceedings of

The First University Journal of

Information and Computing Science 2019

December, 2019

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Effective Features of Web Search Engines

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Abstract

Nowadays, internet are most popular and used by everyone because all importance subject related information, data, news is given by WWW through internet. Search engines have become necessary for users to understand the differences between them in order to achieve the best satisfaction. Web Search engine given the some result links are related to search item and some result links are not related for searching item. The aim of this paper is to know the goal of the Web Search Engine is to provide users with search results that lead to relevant information on high-quality websites.

Keywords: Web Search Engine, WWW, Internet, main features

1. Introduction

Web Search engine is a web application program, they run on the particular web address and this web address are called to website. Performance of every Web Search engine has been improving day by day with powerful search capabilities, technique of various types and the lack of restricted vocabulary make it difficult for users to use Web Search engines effectively.

Web Search engine has two categories; first one is a Computer-generated indexes and second is a directories. Google is the most popular Index Web Search engines.

Google Search Engine – Google is an American multinational technology corporation it given to Internet related services and include online advertise technologies, searching, android operating system, Mail, cloud computing and software. Google is come to internet word in September 4, 1998. Google ranking systems are designed to do just that: sort through hundreds of billions of web pages in our Search index to find the most relevant, useful results in a fraction of a second, and present them in a way that helps you find what you're looking for.

2. Related Works

Google is given to own search results and this search result are categorized as five points. These points are first is more relevant, second is less relevant, third is irrelevant, four is links and five point is sites can't be accessed. More studies focused on the mechanism of how search engine works, as in common all have the main parts of Web crawling, Web Indexing, and searching. [1]

Information Retrieval means a user query prompts engines to return results, which are ranked hierarchically using trust and relevance signals. Web crawling is to browse the web in a methodical, automated manner. [3] Indexing describes pages are analyzed by titles, headings and specific fields. This is the fastest form of search.

Google was unique because it ranked pages according to citation notation, in which a mention of one site on a different web site become a vote in that site's favor. [2]

2.1. Effective Features of Web Search Engines

Web search engines are tools for finding, classifying, and storing information on various websites on the internet. According to computing dictionary, 'Search engine is a program that

allows users to locate specified information from a database or mass of data. Each web search engine performs three main tasks: (I) Searches for web pages available in the WWW and stores information about them. (II) Indexes the retrieved information about the web pages found and consequently, a database is created, and (III) allows for the users to search its database/index through an interface provides searching facilities and options which the user can use at discretion. [1]

Web search engines have become an essential tool in internet usage, and particularly in searching the World Wide Web. Search Engines essentially act as filters for the wealth of information available on the Internet. They allow users to quickly and easily find information that is of genuine interest or value to them, without the need to wade through numerous irrelevant web pages.[3] With that much content out there, the Internet would be essentially unworkable without the Search Engines, with Internet users drowning in sea of irrelevant information and shrill marketing messages.

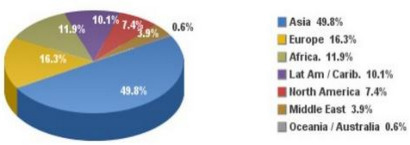

Figure 1. Internet Users in the World by Regions – 2019 JUNE

2.2. Web Search Engine Technology

A web search engine consists of two parts. A spider or robot is a retrieval system. The robot is responsible for finding the web pages, and the retrieval system is responsible for querying the database and presenting the result to the user. [2]

Web pages are linked to each other. A link from page A to page B allows a Web user to navigate from page A to page B. Such a link also contains several pieces of information that are useful to improve retrieval effectiveness. First, the link indicates a good likelihood that the contents of the two pages are related. Second, the author of page A considers page B to be of some value. Third, the set of words associated with the link, called *anchor terms* of the link, usually provides a short description of page B.

A Web robot (also known as *spider* and *crawler*) is a program for fetching Web pages from remote Web servers. Web robots are widely used to build the Web page collection for a search engine.

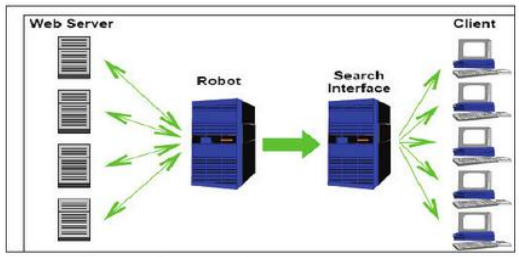

Figure 2. Web Search Engine Technology

3. How Web Search Engines Work

Web search engines work by storing information about many web pages, which they retrieve from the html itself. Data about web pages are stored in an index database. Some search engines, such as Google, store all or part of the source page – cache as well as information about the web pages, whereas others, such as Alta Vista, store every word of every page they find. Most search engines employ methods to rank the results to provide the "best" result first. [5]

Web search engines allow the user to enter keywords that are run against a database. Based on a combination of criteria, the search engine retrieves WWW documents from its database that match the keywords entered by the searchers. [3]

When a search query is entered into a search engine by a user, all of the pages which are deemed to be relevant are identified from the index and an algorithm is used to hierarchically rank the relevant pages into a set of results. [2] A web search engine is a software system that is designed to carry out web search which means to

search the WWW in a systematic way for particular information specified in a textual web search query.

Figure 3. Standard Web Search Engine Architecture

3.1. Categories of Web Search Engines

The important categories of search engines can be summarized as:

3.1.1. Robot Driven Search Engines

These search engines compile their own searchable databases on the web. Crawler or worm programs generate databases by means of web robots. These robots are programs that reside on a host computer and retrieve information from sites on the web using standard protocols. In effect, they automatically travel the internet following links from documents and collecting information according to the HTML structure of the documents. [2]

3.1.2. Directory-based Search Engines

Directories are the yellow pages of the internet. They contain information that has been submitted to them by their indexers or by users who submit entries. The subject directories are often manually maintained, browsable, and searchable web-based interfaces. [4]

Although directories can be searched using keywords, it is often as easy to click on a category, and then click through specific subdirectories until one finds the desired subject.

3.1.3. Subject-specific Search Engines

Subject-specific search engine concentrate on one particular topic and often provide better access to information than powerful keyword indexes. Besides, subject-specific search engines as an organized and structured guide to Internet-based e-information resources that are carefully selected after a predefined process of evaluation and filtration in a subject area or specialty. [1]

3.1.4. Geographical Area Search Engines

Geographic web search engines allow users to query on a particular geographic region. The concern of geographic area is to narrow down the searches. Also the web is being customized in different national and regional language giving space for the web pages in different languages. This too indicates the need of a geographic area specific search engine, since languages are geographic area bound. [3]

4. Advantages and Disadvantage of Web Search Engines

Advantages: (i) The indexes of search engines are usually vast, representing significant portions of the Internet, offering a wide variety and quantity of information resources. (ii) The growing sophistication of search engine software enables us to precisely describe the information that we seek. (iii) The large number and variety of search engines enriches the Internet, making it at least appear to be organized. [5]

Disadvantages: (i) search engine provide way too much useless results. (ii) those that use

search engine frequently may become lazy. Every time they meet difficulties they just go for search engine.

5. Conclusion

In this paper we presented the overview and working architecture of web search engine. Further internet search engines are considered the biggest source of information and find an important place in libraries as quickest means to access information at any time. The basic principle of operations for all search engines are the same which are crawling , indexing and ranking with some differences which may lead to significant changes in the results accuracy.

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Object-Oriented Hypermedia Design Methodology in Modern Web Information Systems

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Abstract

The Web information space is rapidly growing in the size and the diversity of both its data and its audience. A consequence is that Web Information Systems (WIS) in many applications replace existing traditional (not Web based) information systems. Object –Oriented Hypermedia Design Methodology (OOHDM) is a development methodology for the production of multimedia applications. In this paper, we present the features of OOHDM regarding the design of web information system. We also explain the main ideas on the example of online library system as a typical pattern appearing in e-commerce applications.

Keywords: WIS, OOHDM, ecommerce

1. Introduction

Many information systems today use the Web as a platform.[5] The clients interact with the system through Web browsers. Increasing demands of E-commerce require richer functionality of such Web-based Information systems (WIS).The most evident difference between WIS and traditional (non-web) information systems if the large amount of information organized in a web structure .WIS need solid approaches for conceptual structuring the information space and its access for engineering and implementing the required access services. A number of methodologies have been proposed by academia (e.g. Relationship Management Methodology (RMM), Object-Oriented Hypermedia Design Method (OOHDM), UML-based Web Engineering (UWE), etc.). Their main goal is to simplify the development of web sites by abstracting from the implementation and separately considering different aspects. While applying different techniques and notations, a common characteristic of all design methods is to distinguish between a data, navigation, and a presentation design.

2. Web Information Systems

In the use of software engineering world, the lack of precise definitions for these terms ,before we need:[3]

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Jesus Torres received his doctorate in computer science in 1997 from the university of Servilla. His current research is in the areas of requirement engineering, web system development, user interfaces and heterogeneous distributed system architectures.

Manuel mejias graduated as an industrial engineer in 1985 and was awarded his doctorate in industrial engineering in 1997. His research activity is centered on object oriented modeling of software systems, method environments in software development and software development process.

In the mid 80s, a series of systems with focus on multimedia systems. These systems tend not to be complex in functionality requirements. The interfaces and multimedia information storage (images,videos,sounds, etc) are vital.

Another concept is information processing systems for digital libraries. A digital library must fulfill all the tasks of a conventional library and make use of digital technology advantages in storage, search and network and integrating new types of media. Digital libraries are built by community users and their functionalities depend on the informational needs of community.

The multimedia information appears in WIS and the need for a suitable, user-friendly interface make them similar to multimedia systems. The concept of WIS is a broad concept that includes what are known as multimedia systems, management systems and information processing systems for digital libraries. The electronic library make it possible to read, summarize,and cite electronic version of editions. Any user can form their own "bookshelves" and leave bookmarks on pages and materials that of special interest for them. A WIS is a system of information that is characterized by larger storage needs and complex functionality requirements and other aspects such as interface, navigation and multimedia.

3. Historical Overview of Modeling Method

Modeling methods follow different paradigm, depending on their origin and focus. Data-oriented method originates from the field of database systems, the primary focus of these methods of the modeling of database-driven of the web application as RMM,[6] Hera, Wireless Markup language (WML).

Hypertext-oriented methods center on the hypertext character of web applications, they emerged mainly from the field of hypertext systems. Representatives of their group are the hypertext Design Model (HDM), which has been extended into W2000 and HDM_lite or Web Site Design Method (WSDM).

Object-oriented methods are based on UML. It is a preferred notation when a standard language for modeling is selected. These categories include Object-Oriented Hypermedia Design Method (OOHDM), Object-Oriented Web Solution (OOWS) and UWE Software-oriented methods look at web applications mainly from the perspective of traditional software development using techniques that strongly follow classical software engineering [1].This category are Web Application Extension (WAE) or WAE2.In this paper, we use OOHDM that consists of the Navigation Class Schema and the Navigation Context Schema.[4] Figure 1 shows OOHDM methodology.

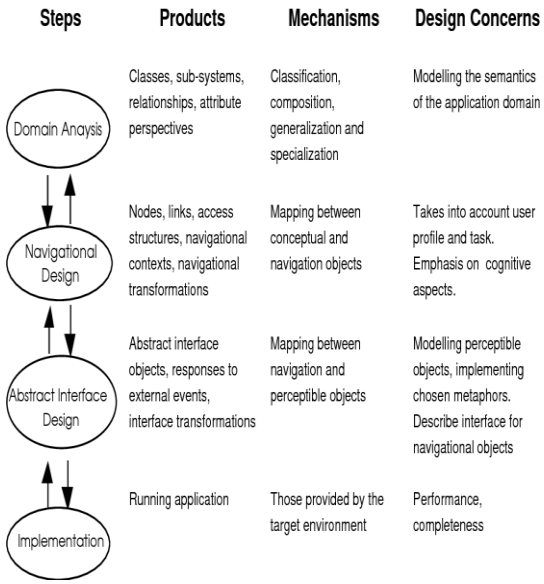

Figure 1. OOHDM Methodology

3.1. OOHDM- Object Oriented Hypermedia Design Methodology

The OOHDM methodology represents an object- oriented approach to WIS design.[2]It includes complex information, and may allow sophisticated navigation behavior. It uses abstraction and composition mechanisms in an object oriented framework to allow the specification of complex navigation patterns and interface transformations. In OOHDM, a hypermedia application is built in a four-step process.[7]

Domain Analysis: The domain is built using object-oriented modeling principles augmented with some primitives.

Navigational Design: The Navigation Model in OOHDM consists of the Navigation Class Schema and the Navigation Context Schema. The Navigation Class Schema contains navigation classes (nodes) derived from the conceptual classes by selecting and combining attributes from different related conceptual classes. Attributes are of the data type or the hyper link anchor. Figure 2 gives the navigation class structure for the same problem.

OOHDM example navigation class schema

The Navigation Context Schema represents the navigation structure of the application and consists of navigation contexts. The navigation contexts are derived from the navigation classes, hyperlinks, and access structures and represent collec tions of navigation classes instances that can be explored in some way (e.g. sequentially). Figure 3 gives a particular instance of this example.

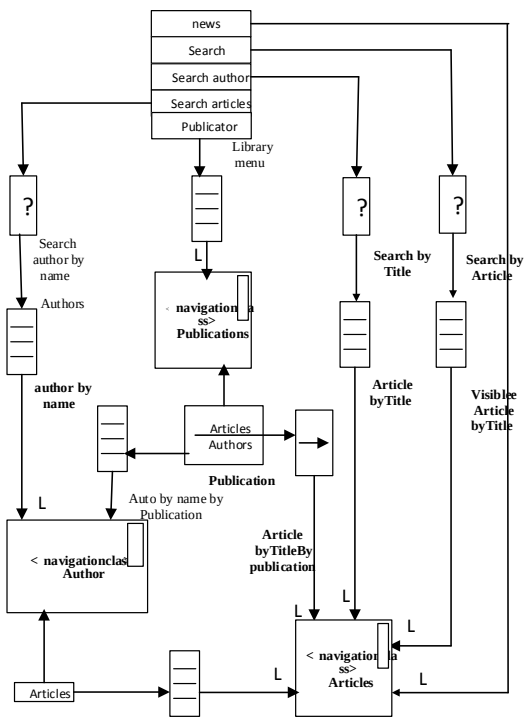

Figure 2. OOHDM example navigation class schema

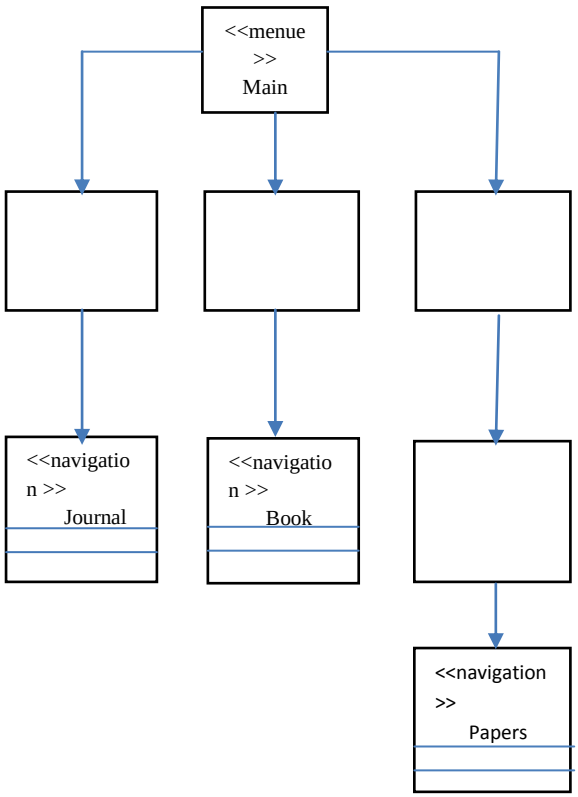

Figure 3. Navigation of diagram for online library

Abstract Interface Design: It is built by defining perceptible objects in terms of interface classes. These classes are aggregations of primitive ones or other interfaces classes. Interface objects provide navigational objects with a perceptible appearance.

Implementation: The hypermedia application can be implemented by having specified the abstract interface. The abstract interface design produces abstract data views (ADV) and abstract data view charts (ADV-charts). ADVs define the interface appearance of navigational classes and access structures, and other useful interface objects (e.g., menus, buttons, etc.). The dynamical part of the interface is given by ADV-charts, a derivative of the UML state charts that specify the system's reaction to external event. . Among the object-oriented design patterns used in OOHDM we distinguish the pattern for the "In Context" classes for the navigation and classes and Advs. From the UML notation we recognize the class diagrams for conceptual schemas and the state diagrams for the ADV-charts. The implementation phase produces a WIS based on the previous OOHDM specifications. The designer has to decide on how to store the conceptual and navigational objects. Also he needs to decide on how to realize the static and dynamic aspects of the interface using HTML and some extensions.

4. Online Library Example

An e-library is a physical site and/ or website that provide around the clock online access to digitized audio, video, and written material. It provides free copies of books, journals etc. available to the users. Normally these materials are classics which have no copyright digital formats and accessible by computers. The digital content may be stored locally, or accessed remotely via computer networks. A digital library is a type of information retrieval system. Digital Libraries are increasingly popular research area that encompasses more than traditional information retrieval or database methods and techniques.

Many schools and institutions have already begun the task of converting their traditional collections of books and educational materials to electronics format: some files become available in HTML format while others can be downloaded in PDF Format.

There are many advantages by using online library.(1)Digital libraries give access to multiple contents with a infinite number of

resources and selections. Many students can access an enormous amount of knowledge and share contents with others, facilitating the expansion of education.(2) Online libraries help the scientific society since they act as for the storage of research data, information and findings. Today, Digital libraries, the online copies of studies and researches can be protected and collected to create a virtual heritage of information for the coming generations. (3) Digital libraries are accessible anywhere and at any moment using the technological device. Students can consult all other educational contents without having to wait and go to the nearest physical library. (4) The digital storage of books solve the problem of deterioration. Using digitizing materials, it is possible to access contents how many times a student needs, using formats (mp3, digital images, textbook, etc) which are much safer to use. (5) Digital libraries that facilitate the access to information and data collections, allowing students to perform sophisticated searches to a variety of queries.

We have an online component, with books and other materials which are heavily used. However, there are many functions of a library do not work well online. We are very much a place for people to gather whether for meetings, clubs or any number of other purposes. An online library would be of no use to someone who has no internet access at home. We provide internet access; they want a little peace and quiet so they can concentrate.

5. Conclusion

OOHDM is object-oriented state-of-the art methodologies that can be used by Enterprise Information System (EIS) designers. It has extensions for adaptivity support. Object orientation makes them strong in the design of WIS with complex business logic. OOHDM was enhanced to handle the establishment of Rich Internet Applications(RIA).The model is to highlight the creation of the rich user interfaces by engaging ADVs (Abstract Data Views).The ideas proposed point to our models, schemes and architecture regarding the design. We have indicated how these ideas can be implemented on the basic of our example.

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