

**ROLE OF SEARCH ENGINES IN LIBRARY AND  
INFORMATION  
CENTRES: AN OVERVIEW**

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**ABSTRACT**

Discuss search engines giving the definitions taken from different sources like dictionaries, etc. Explain the working of search engines, components of search engines, types of search engines, effective use of search engines, using search engines, search results, role of search engines in libraries, popular search engines, evolution of search engines and ideal search engines features. Highlight the role of search engines in libraries in located pin pointed information. Suggest that, library staff should have sufficient knowledge of search engines to make maximum use of internet. Lists some popular search engines which are frequently used to access information on the internet.

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## INTRODUCTION:

Internet is the largest source of information today. It offers information on large amounts on variety of subjects. This very fact, in a way could hinder the use of internet. This is because; finding relevant information on the Net becomes very difficult. Over the years, with the developments of the net, a number of tools to help find information have been designed initial search tools included Archie, Gopher, Veronica, WAIS and many other. With improvements in technology, search engine have also improved. Today a large number of powerful search engines with a variety of search strategies are available.

## WHAT IS A SEARCH ENGINE?

According to computing dictionary “search engine is a program that allows users to locate specified information from a database or mass of data. Search engine sites are extremely popular on the World Wide Web because they allow users to quickly shift through millions of documents on the internet”.

A search engine is a searchable database of websites collected by a computer program (called a wanderer, robot, crawler, worm or spider). When a keyword is entered, the engine looks for keywords in its database, and any relevant records are displayed. Websites are selected automatically and are not generally evaluated in anyway before they are entered into the database.

## WORKING OF SEARCH ENGINES

Every search engines creates its own copy of the World Wide Web called an index. The size of the search engines index varies from search engine to search engine, but it is always smaller than the World Wide Web as whole. The search engines build a list of pages to add to its index using a special piece of software known as spider. The spider crawls across the web, adding pages it visits to the list of pages to index. The spider is capable of a reading a web page and finding links to other pages to visit. In this way the spider can travel across the web finding pages to add to the search engine index.

Sometimes after a page has been ‘spidered’ (visited by a spider), search engines software adds a copy of the page to the search engine index. When users enter a query into search engine, search engine software searches the index to find pages that match the query. It then sorts those

pages into ranking order. Each search engines uses its own 'secrete recipe' to find and rank the pages, but most base their recipe on the frequency and location of the search term of the page.

## COMPONENTS OF SEARCH ENGINE

Search engine basically has three components.

### 1. The robot

Robots are called as the 'web wanderers'. 'Web crawlers' or 'spiders'. These robots are programs that traverse the www looking for the information specified. Robots move from one web document to by referring to the hyperlinks that are embedded in the WebPages. Robots use the HTTP protocol to retrieve documents from servers. In the process of traversing the web, the robots discover new resources, indexes, etc to facilitate search. A robot performs important functions such as indexing documents, validation of HTML, validation of links. Monitoring new information, mirroring the web robots are constantly scanning the Net and keeping track of any new document that may appear.

### 2. The Database

The search engine database is that component which records all the indexed information. It includes web addresses.title, headers, words, first lines, abstracts and sometimes even full texts in its lists. Database can store anywhere from as thousand to millions of web pages. The database size determines the comprehensiveness of searching. There are some search engines like Lycos which have more than one database. Robots use in-built heuristic techniques to retrieve those pages that are most popular as they are usually indexed first in the database. This feature of search engine increases its searching capability as the robots scan more information in order to retrieve a particular request.Obviously,as more information is scanned the probability of the number hits being more is higher.

### 3. The Agent

The agent is the interface between the user and the database. It is that Program which represents the user need to search database and displays Sorted list of 'hits' after a user makes a search request. Generally, the basis of sorting is relevance to the search request. The most

relevant hits appear First on the lists. Among those items with equal relevance, those hits selected from not so-popular sites.

#### 4. Updating database

The database, being the core of the search engine, needs to be maintained with utmost care. Currentness of information is vital and the data base thus needs to be updated as often as possible. Updating database is possible in two ways.

**4.1. Cumulative Updating:** In cumulative updating, existing URLs are updated at frequent intervals. Lycos, for example, follows the cumulative updation strategy.

**4.2 Reproducing Updation:** A robot is sent around the web to collect the latest information at frequent intervals of time, say one a week. The database is then compiled. The robot is then sent again for another round of collecting updating information. Periodically, the entire database is replaced. Webcrawlers follows the reproducing updating strategy.

### TYPES OF SEARCH ENGINES

Search engine can be categorized into the following types:

#### 1. Individual search engines

There may be two kinds of individual search engines depending on the type of database they include either full text or non-full text. They may also be divided on the basis of procedure that their robots use to collect information from the databases.

#### 2. Subject directories

Subject directories are hierarchical indexes or directories of internet resources that may be searched and browsed. The focus for providing information is by subject matter, which happens to be the most commonly used access point by most users. If www is regarded as a huge disorganized book, the subject directory serves as a table of contents and search engines are like the index of the book. Example-the World Wide Web virtual library subjected directory included

an alphabetical list of subjects. Each subject resource lists was linked to sites with brief descriptions of the content at those sites.

The greatest advantage of subject directories is that is that they are very useful in browsing subject information, especially in cases where highly specialized, selected information is required. The limitation of subject directories lies in the fact their coverage is not exhaustive enough and frequency of updation is less. Subject directories are hence not used as main access tools to the Net.

### 3. Meta-Search Engine

Meta search engines means a combination of number of search engines. They are also called as “combined” or simultaneous search engines. The advantage of these is that on submitting a search query, several search engines perform search at a time. The limitation is that long response time and lesser accurate search results example –savvy search and mete crawler.meta search engine also known as multi search engine.

Meta search engine do not have their own database or web pages. They used and deliver the databases and searching program of each of the individual search engine they query. So Meta search engine acts as an intermediary to pass a search tools they query, and will give more unified results from many different sources. The search results typically include hyperlinked titles of sites which matched the search terms, a brief description of each site, the individual search engine which located the site, and sometimes the URL for the site.

Meta search engines have some common features as:

They all search most of the popular search engines.

- They use parallel or simultaneous querying of the individual search tools and have high speed processors to format and deliver the results to the screen.
- Most of them allow to set the length of the time the users are willing to wait and personalize some aspects of the format.
- The longer the time the more result will be retrieved.

The important Meta search engines are

Met crawler

<http://www.metacrawler.com>

Dog pile	<a href="http://www.dogpile.com">http://www.dogpile.com</a>
Savvy search	<a href="http://www.savvysearch.com">http://www.savvysearch.com</a>
Inference finds	<a href="http://www.inference.com/find">http://www.inference.com/find</a>
Mamma	<a href="http://www.mamma.com">http://www.mamma.com</a>
Profusion	<a href="http://www.profusion.com">http://www.profusion.com</a>

#### 4. Free text search engines

This type of search engines allows you to simply type in any term phrased or word. The search engine will then go away and attempt to match terms with sites that it has listed in its database. It will then give you a list of sites which match your criteria. Each search engines works slightly differently. However you need to try them out and find which works best for you. These engines work best if you known exactly what you are looking for, and have some keywords, which neatly define what you are looking for. It is up to you to choose the most appropriate terms and it is worth using more terms, rather than less terms.

#### 5. Index search engines

These engines guides you through search by providing you with a series of headings and sub headings until you finally reach a list of sites. Very useful if you want a broad overview of what is available within a subject area, although you are constrained by the classification scheme which is in use. So you may have go up and down the subject trees a few times until you find exactly what is thereafter.

### EFFECTIVE USE OF SEARCH ENGINES

It is important to choose right keywords for effective searching. Similarly, it is essential for web searching to have right keywords, as there is a lot of Information and out of it some may be useful and much of it useless. It is better for new searcher on the web to use plain keyword search. This way Most of the hits will appear at or near the top of the list. It is difficult to get precise information by using natural language Search or by using multiple words or phrases. For this, the below Mentioned means to search specific keywords can be followed.

**1. Boolean Search**-Boolean operators AND, OR, NOT and NEAR can be used to make the search in following ways.

**1.1 AND** to combine topics

Ex-Journalism AND ethics

Ex-Journalism +ethics

**1.2 AND NOT** -To eliminate the unwanted sub topics through search.

Ex-Biomedical literature and not cancer

**1.3 OR**-enhance the range by enabling to search through synonyms of water sea and river.

**1.4 NOT** searches-used to eliminate keywords /subject from searches.example,to have information cancer and exclude 'tumor' putting minus(-) sign in front of the word i.e. Avoiding such as cancer-tumor displays hits containing cancer but not tumor. No space is given between minus sign and the word to be excluded OR example 'cancer' NOT 'Tumor'

**1.5 NEAR** searches-where some of the words appear in close proximity to one another. Example 'Vajpayee' NEAR "disinvestment policy".

**1.6 Complex queries**-By grouping Boolean operators(AND,OR,NOT and NEAR) search engines also allow to create complex queries, statements can be given by using parenthesis such as 'Bandra' NEAR('Mumbai' Or 'Bombay').This search is called 'Nested search' because one statement is 'nested ' within another.

**2. Wild cards** – The wild card search is made by asterisk i.e., to look for variations on a particular word. IN case, search is to be made for variations on a particular work like agric\* to find reference to 'agricultural', 'agriculture' etc...It will be better to use wild card along with at least one unique keyword such as Pest NEAR agric\*.In case the keyword is not used, the search may take long time and provide large list of hits.

**3. Menu option or radio button** –These are used by some of the search engines to make the AND searching extremely easy. By following ways, menu options or radio buttons can be used in search engines.

Menu option  
All the words  
Any of the words  
The exact phrase  
Words in title

**4. Step words**-Search engines ignore some words, which are called stop words.example-the, to, with, from, of, that, who, etc.

**5. Phrase searching**-The phrase Indian economy when used as a result search sitting results in thousands of hits.Whereas,the same phrase within a double quotes as “Indian economy”, results in a fewer highly relevant hits.

**6. File type searching**-The file type searching enables searching such documents containing specific keywords in specific type of documents such as .pdf, .doc, .ppt, etc.In Google search, a search formulation India file type: PDF will retrieve all .PDF documents containg the India.However,file type searching does not retrieve any web pages.

**7. Field searching**-The field search does search for words in title of the website and URL address, thereby restricting retrieval,for example a search on term’Indira’ with search formulation allintitle:Indira results in pages containing the term”Indira”in title page. The ‘field searching’ technique expects the developer of the website to include most important words in the title.

**8. Limits**-This technique restricts the search results to a particular time period or domain. The date limit can be used to restrict search results for search sites. Or web pages that have been updated during particular period viz., during last three months, six months, date rang, etc.Google, Yahoo, Alta vista and other search engines support this feature.



**9. Synonyms**-If a Researcher's wants to search not only for a particular keyword but also for its synonyms then you can place tilde sign (“~”) immediately in front of the keyword.

**10. Other**-In addition to above mentioned strategies there are some search features, which are specific to particular search engines. In Google, to find the definition, one has to just enter the term with a prefix ‘define:’ for example, define :library provides definitions for the terms library derived from various online dictionaries and also provides the uniform resources locator for such sites. Similarly, Google can also do mathematical calculation provided in a standard calculator. For example, by typing  $\sqrt{16}$  in the search box and pressing the enter key, one will get the square root of the number 16. Also both Google and Yahoo can be used for searching the books catalogued in OCLC database ‘WorldCat’. A title of the book with a phrase “Find in a library” gives the desired results. Almost all search engines, apart from providing index to web pages, also provide a separate search facility for images, news, products, audio, video, files, etc.

### USING SEARCH ENGINE

- The interface between search engine and the user is browser.
- Search engine must be having a form of plain box into which search terms needs to be entered.
- The results will be displayed according to search input.
- Clicking on the particular site will take to that particular site.

### SEARCH RESULTS

- Most search engine search result display indicate
- Number of documents retrieved
- Percentage of relevance
- Brief history
- Hyper linked URL
- Size of the document
- Date
- Language

### ROLE OF SEARCH ENGINES IN LIBRARIES

A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A.

International Journal of Management, IT and Engineering

<http://www.ijmra.us>

Search engines are useful to libraries in the following ways.

1. They are ready reference sources for current information.
2. Retrieve required information in minimum possible time.
3. Directing towards the location of resources other than searching for, and
4. Acquaint the users with the latest trends on topic or Subject world wide.

### POPULAR SEARCH ENGINES

Without the address of search engines it will be difficult for a person to access information to save time it is very essential to have exact address and tool to search the desired information. Moreover, it is also helpful for the librarians to keep the addresses of these search engines for providing effective services. Given the following sections are some of the frequently used search engines.

1. Yahoo ([URL:http://www.yahoo.com](http://www.yahoo.com))
2. Google ([URL:http://www.google.com](http://www.google.com))
3. Altavista ([URL:http://www.altavista.com](http://www.altavista.com))
4. Hotbot ([URL:http://www.hotbot.com](http://www.hotbot.com))
5. Excite ([URL:http://www.excite.com](http://www.excite.com))
6. Infoseek ([URL:http://www.infoseek.com](http://www.infoseek.com))
7. Lycos ([URL:http://www.lycos.com](http://www.lycos.com))
8. Webcrawler ([URL:http://www.webcrawler.com](http://www.webcrawler.com))
9. The all-in-one search ([URL://http://www.albany.net/allinone/](http://www.albany.net/allinone/))
10. Search.com ([URL:http://www.webrefernce.com/search.html.](http://www.webrefernce.com/search.html))
11. ASKJEEVES ([URL:http://www.aj.com](http://www.aj.com))
12. LOOKSMART ([URL:http://www.looksmart.com](http://www.looksmart.com))
13. REDIFF ([URL:http://www.rediff.com](http://www.rediff.com))
14. Info seek guide ([URL://http://www.infoseek.com](http://www.infoseek.com))
15. Megellan ([URL:http://www.mckinely.com](http://www.mckinely.com))
16. Open Text ([URL:http://www.opentext.com/omw/f.omw.html.](http://www.opentext.com/omw/f.omw.html))
17. MSN ([URL:http://www.MSN.com](http://www.MSN.com))
18. Dog pile ([URL:http://www.dogpile.com](http://www.dogpile.com))
19. Profusion ([URL:http://www.profusion.com](http://www.profusion.com))

20. Internet sleuth (URL:<http://www.isleuth.com>)

## EVALUTION OF SEARCH ENGINES

Just as the amount of information on the net is growing in an exponential manner, so are the tools to help the user pin-pointedly access the information he needs. The growing number of search engines on the web, each with its own characteristics, formats, search strategies and quirks leaves the users undecided and as to how to go about locating information on the Net. Evaluating search engine is thus important. Evaluation of search engine is general based on such criteria as relevance, ranking, precision, recall, response time, validity of link, interface, complex search, update of data, database size, duplications, comprehensiveness, etc. A search engine which may satisfy the so identified criteria to an optimum extent could be considered a good search engine.

### 1. Coverage

In terms of the number and scope of URLs collected by the database.

### 2. Relevance of results

This depends on the data base of each search engine. The relevance is indicated generally in the order in which the results are displayed.

### 3. Database size

Different search engines have allocated different sizes databases. Larger the data base size more the retrieval.

### 4. Response time

This deals with the time lag between the user's search query entering and the actual display of the search results.

### 5. Geographical Bias

There are sometimes be biases geographically. More pages of a particular country may be indexed while others are neglected. Popular search engines have sites by country and language.

### 6. Display format

Each of the search engines differs to an extent in their display format.

## 7. Validity of linking

Although a number of search results are displayed, often the links are not obtained.

## 8. Levels of searching

The depth of which one can search differs from one search engine to others.

Different search engines offer different features. Lycos include related topics first, followed by the URLs and a brief summary. Related web pages to each URL are also included. Infoseek and AltaVista are similar in displaying the URL, First few lines of the document and size of the document. While Infoseek in addition provides the percentage of relevance of each document, AltaVista provides the date of uploading and language of the document.

### IDEAL SEARCH ENGINES FEATURES

It is evident from the previous studies that no single search engine tested had a perfect performance and could cover all the web browsers. But now the question arises as to what a search engine should be to constitute a comprehensive and ideal tool for information searching on the net. So the good and ideal search engine features should included.

1. Search engine should contain comprehensive information on all broad areas with multimedia effect i.e. textual, image/video, audio and graphics.
2. To facilitate searching of information on different query it should be indexed on field of full text, URL, title bearer and weighted word.
3. Search engines should provide a hierarchical subject oriented guide which lists sites and organize them into appropriate subject categories providing full text information. To achieve the same, it is advisable to utilize Dr.S.R.Ranganathan's Laws, principles, and canons of classification for developing and designing a hierarchical database to provide maximum access to users in time.
4. It should have quick response time and higher precision and recall.
5. It should act as a user friendly interface interacting with the other in a co-operative and flexible way that makes the underlying system transparent to users of the system.
6. It should regularly update the contents of the database.
7. The database should of hyper textual nature which should perform good validation of link with less duplication links.

### LIMITATIONS OF SEARCH ENGINES

1. Search engines produces to many results.
2. General help minus at search instructions which are generally insufficient and Ambiguous.
3. The search result and up being out of date and the message URL not found.
4. Lack of consistency between different search engines.

### CONCLUSION

Today, internet is considered the biggest source of information and finds the important place in libraries as quickest means to access information at any time. But it requires the help of search engines for the effective and optimum use. Search engine is an aid to find pin pointed information to save and time and energy. Libraries can only take the maximum out of it if their staff has adequate knowledge of search engines. This is very much needed in the present day context.

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