WEB SEARCH ENGINES

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What is web

▶ It requires internet connection

▶ Globally connects millions of computers together and thus forms a massive network of networks is called the internet.

▶ Data traveling over the internet is arranged according to one of the format standards, which together are called protocols.

▶ e.g. file transfer protocol (FTP), simple mail transfer protocol (SMTP), and hypertext transfer protocol (HTTP) are three examples.

▶ The entire collection of all interlinked hypertext documents located around the planet is called the Web, also known as the World Wide Web (WWW).

▶ One page in a hypertext document is thus called a webpage

What is web

- Information about the location of this webpage is called a web address, also known as a uniform resource locator (URL).

- URL by the way is just part of a uniform resource identifier (URI) but URL is often used verbally as a synonym for URI.

What are web search engines

► A web search engine is a software system that is designed to search for information on the world wide web. The search results are generally presented in a line of results often referred to as search engine results pages (SERPS). The information may be a mix of webpages, images, and other types of files. (Wikipedia)

► Search engines are programs that search documents for specified keywords and returns a list of the documents where the keywords were found. A search engine is really a general class of programs, however, the term is often used to specifically describe systems like Google, Bing and Yahoo Search that enable users to search for documents on the world wide web. (Webopedia)

► A computer program that searches documents, especially on the World Wide Web, for a specified word or words and provides a list of documents in which they are found. Also called retrieval engine. (dictionary reference)

► A computer program that is used to look for information on the Internet. (Merriam Webster)

Web search engines History

▶ Before 1990, there was no way to search the Internet.

▶ The very first tool used for searching on the Internet was "Archie".

▶ It was created in 1990 by "Alan Emtage", "Bill Heelan" and "J. Peter Deutsch", student of computer science at "McGill University in Montreal".

▶ 1990: Archie—the very first search engine

▶ 1991: Veronica and Jughead

▶ 1992: Vlib

▶ 1993: Excite and World wide web wanderer

▶ 1994: AltaVista, Galaxy, Yahoo search, Infoseek, Webcrawler, Lycos

▶ 1995: Looksmart.

Web search engines History

- 1996: Google, HotBot, Inktomi
- 1997: Ask.com
- 1998: MSN; dmoz
- 1999: Alltheweb
- 2005: Snap
- 2006: Microsoft Livesearch
- 2008: Cuil
- 2009: Microsoft Bing

Importance of web search engines

▶ Search engines are important because with over 8 billion web pages available, it would be impossible to search for the information that is specifically needed. This is why search engines are used to filter the information that is on the internet and transform it into results that each individual can easily access and use within the matter of seconds

TYPES OF SEARCH ENGINES

- ▶ Crawler based
- ▶ Directories
- ▶ Hybrid search engines
- ▶ Meta search engines

Crawler based

- Crawler-based search engines use automated software programs to survey and categorise web pages.

- These types of search engines use a "spider" or a "crawler" to search the internet. The crawler digs through individual web pages, pulls out keywords and then adds the pages to the search engine's database.

E.g.

Google (Www.Google.com)

Ask Jeeves (www.Ask.com)

DIRECTORIES

- A 'directory' uses human editors who decide what category the site belongs to; they place websites within specific categories in the 'directories' database.

- The human editors comprehensively check the website and rank it, based on the information they find, using a pre-defined set of rules.

E.g.

Yahoo Directory (www.yahoo.com)

Open Directory (www.dmoz.org)

Hybrid Search Engines

► Hybrid search engines are search engines that use both crawler based searches and directory searches to obtain their results .

► More and more search engines these days are moving to a hybrid-based model.

E.G.

Yahoo (www.Yahoo.Com)

Google (www.Google.Com)

Meta Search Engines

► These transmit user-supplied keywords simultaneously to several individual search engines to actually carry out the search.

► Search results returned from all the search engines can be integrated, duplicates can be eliminated and additional features such as clustering by subjects within the search results can be implemented by meta-search engines.

E.G.

► Metacrawler (www.Metacrawler.Com)

► Dogpile (www.Dogpile.Com)

How web search engines work

A search engine operates in the following order :
1. web crawling
2. Indexing
3. Searching

How web search engines work

▶ A **web crawler** is an internet bot that systematically browses the world wide web, typically for the purpose of web indexing.

▶ When we enter a query into a search engine, the engine examines its index and provides a listing of best-matching web pages according to its criteria.

▶ Search engine provides the "best" results first.

Advantages of Using Search Engines

- ▶ Time saving
- ▶ Free access
- ▶ Advanced search
- ▶ Variety
- ▶ Precision
- ▶ Organization

Top Ten Search Engines

1. **Google** – According to the **comScore report** 69.5% of searches were powered by Google and 25% by Bing. Google is also dominating the mobile/tablet search engine market share with 89%!

2. **Bing** – Bing is microsoft's attempt to challenge google in the area of search but despite their efforts they still did not manage to convince users that their search engine can produce better results than google.

3. **Yahoo** – since October 2011 yahoo search is powered by Bing. Yahoo is still the most popular email provider and according to **reports** holds the third place in search.

4. **Ask.Com** – formerly known as ask Jeeves, ask.Com receives approximately 3% of the search share. ASK is based on a question/answer format where most questions are answered by other users. It also has the general search functionality but the results returned lack quality compared to google or even Bing and yahoo.

5. **Aol.Com** – according to **netmarketshare** the old time famous AOL is still in the top 10 search The AOL network includes many popular web sites as like engadget.Com, techchrunch.Com and the huffingtonpost.Com.

6. **<u>Wolframalpha –</u>** is different from all the other search engines. They market it as a computational knowledge engine which can give you facts and data for a number of topics. Based on a number of assumptions.

7. **<u>Blekko.Com</u>** – was developed by ex - googlers and it is better suited for webmasters .

8. **<u>Duck duckgo</u>** – has a number of advantages over the other search engines. It has a clean interface, it does not track users, it is not fully loaded with ads and has a number of very nice features (only one page of results, you can search directly other web sites etc.).

9. **<u>Way back machine</u>** – is the internet archive search engine. You can use it to find out How a web site looked since 1996. It is very useful tool if you want to trace the history of a domain and examine how it has changed over the years.

10. **<u>Chacha.Com</u>** – according to Alexa chacha.Com is the 8th most popular search engine with a ranking position of 297 in the US. It is similar to ask.Com where users can ask or answer a particular question. They also have a number of quizzes that can help you decide on a number of topics. It's not bad at all and the answers are precise and to the point

General Search Engines

Research may be started with one of these more general academic search engines

- **Intute (**http://www.Intute.Ac.Uk/**)**

This website may be used to locate search tools to find the best and most reliable sites to start research.

- **Academic info (**http://www.Academicinfo.Net/table.Html**)**

Search or browse through this site for listings of the best academic websites out there.

- **Iseek (**http://education.Iseek.Com/iseek/home.Page**)**

It has been designed for teachers, students and scholars. This search engine provides relevant and reliable results.

- **Refseek (**http://www.Refseek.Com/**)**

This academic search engine will help in finding useful reference material from predominately .Edu, .Org and .Govt sites.

- **Virtual LRC** (http://www.Virtuallrc.Com/)

The virtual learning resources center is a good place to start looking for material that can help in studies and research.

- **Academic index** (http://www.Academicindex.Net/)

Find information that can set the stage for future research by using this helpful search tool.

- **Bubl link** (http://bubl.Ac.Uk/link)

If a researcher likes resources organized by the Dewey decimal system, this site is perfect for your online research.

- **Digital library of the commons** (http://dlc.Dlib.Indiana.Edu/dlc)

This site organizes all the best free information on the web including articles, books, images and even dissertations in one easily searchable place.

Meta Search Engines

Want to search it all at once? Try these tools that allow search from multiple sites at once and save the priceless time of researchers

- **Dogpile (**http://www.Dogpile.Com/**)**

Search google, yahoo, Bing and more at once with this great search engine.

- **Meta crawlerweb(**http://www.Metacrawler.Com/**)**

By searching several search sites at once, researchers' will save time and get better results by using this tool.

- **Mamma (**http://www.Mamma.Com/**)**

Find news, images, video or web results from the top search sites on the web here.

- **Myriad search (**http://www.Myriadsearch.Com/**)**

This site customizes search by using multiple search engines.

- **Surfwax (**http://www.Surfwax.Com/**)**

This customizable search engine lets an information seeker search through Wikipedia, RSS feeds, news and more.

- **Clusty (**http://clusty.Com/**)**

This site searches through several other search engines and organizes the results into clustered and more easily manageable groups.

- **Copernic agent(**http://www.Copernic.Com/en/index.Html**)**

Try out this tool to search through a variety of engines on the web, sort out desktop or find a piece of news you know is out there.

- **Hotbot (**http://www.Hotbot.Com/**)**

Choose which search tool you'd like to use when searching through the information found here.

Search Engines for Databases and Archives

Databases and archives can be greatly beneficial to find primary and secondary sources for work.

▶ **Library of congress** (http://www.Loc.Gov/index.Html)

This huge library has a large number of fully-searchable archives containing books, source documents, photos and more.

▶ **Archives hub** (http://www.Archiveshub.Ac.Uk/index.Html)

Using this site, researchers will get access to the archives of major UK universities and colleges.

▶ **Archival research catalog** (http://archives.Gov/research/arc)

Browse through the holdings of the US national archives or use their helpful search tool to find just what you're looking for.

▶ **Arxiv** (http://arxiv.Org/)

Find articles on physics, mathematics, computer science, biology and finance by using this amazing and expansive archival database.

▶ **<u>Celestial registered archives</u>** <u>(http://celestial.Eprints.Org/)</u>

This site is a search engine for archives themselves, letting the researchers search through and find collections that might meet their needs.

▶ **<u>Archive net</u>** <u>(http://www.Archiefnet.Nl/index.Asp?Taal=en)</u>

Try out this Dutch site for accessing archival materials found in the Netherlands and around Europe.

▶ **<u>Nasa historical archive</u>** <u>(http://www.Ksc.Nasa.Gov/inforcenter/history/history.Html)</u>

Find relevant information on Nasa's space missions, history, and more on this site.

▶ **<u>National agricultural library</u>** <u>(http://www.Nalusda.Gov/)</u>

If research involves agriculture, researchers may want to see what this government search engine and archive has to offer.

- **<u>UNESCO archives portal</u>** **(**<u>http://www.Unesco.Org/webworld/portal_archives/pages/index.Shtml</u>**)**

This site is an excellent resource for finding out what archives are out there, how to find them, and how users can get access to them for research.

- **<u>The British library archives</u>** **(**<u>http://sherpa.Bl.Uk/</u>**)**

As one of the largest libraries in the world, these archives hold an impressive amount of information that researchers can search through here.

Search Engines for Books and Journals

▶ **World cat(**http://www.Worldcat.Org/**):**

If in the course of your research you've found a book you need and your local library doesn't have it, what do you do? That's where this search engine is incredibly useful, letting you find out the next closest library where you can access the required material.

▶ **Google books (**http://books.Google.Com/**)**

While not all the books on here are represented in full-text, it's still a great search tool for finding books that could serve researchers well in research and getting a sneak peek at what they hold inside.

▶ **Scirus (**http://www.Scirus.Com/**)**

This search engine will return only high-quality scientific information from journals, so researchers will know that they are not wasting their time with unusable sources.

▶ **Highbeam research (**http://www.Highbeam.Com/**):**

This tool lets researchers search through over 6,000 publications in one place.

- **Vadlo (**http://vadlo.Com/**)**

Look through loads of biomedical and life sciences articles on this site.

- **Open library (**http://openlibrary.Org/**)**

If researchers need books and they need them now, they may see what this free and public domain library has to offer.

- **Online journals search engine (**http://www.Ojose.Com/**)**

Find just about every journal out there that's available online, both free and pay, with this search engine.

- **Google scholar (**http://scholar.Google.Com/**)**

While regular google can be a helpful tool, sometimes researchers just need scholarly results, and that's just what this tool does, paring down results to the most reliable and academic sources.

- **Bioline international (**http://www.Bioline.Org.Br/**)**

Through this site users can search through free and open access medical journals.

Search Engines for Science

► These academic search engines focus on returning high-quality scientific results.

► **Scinet science search (**http://www.Scinet.Cc/**)**

Find the best science and technology related resources through this search engine.

► **Sciseek (**http://www.Sciseek.Com/**)**

This site is home to an excellent search engine and directory for just about every niche area of science.

► **Biology browser (**http://www.Biologybrowser.Org/**)**

On this site researchers will be able to find curated resources that are relevant to biology-related work.

► **Athenus (**http://www.Athenus.Com/**)**

This search engine will help in finding news and information related to science and engineering.

- **Scicentral (**http://www.Scicentral.Com/**)**

On this site, researchers will not only find a helpful search engine, but a directory of the best science news sources on the web.

- **Strategian (**http://www.Strategian.Com/**)**

Find quality information on science, math, medicine and more through this search engine.

- **INIS web services (**http://www.Iaea.Org/inisnkm/nekr/ne_databases.Htm**)**

Those who are doing research on the nuclear sciences will find a great database and search tool here.

- **CERN document server (**http://cdsweb.Cern.Ch/**)**

Check out this site to search through over a million scientific documents.

- **ZMATH online database (**http://www.Zentralblatt-math.Org/zmath/en**)**

Try out this European site to access 2.8 million articles and references on scholarly mathematical research.

- **Techsearch (**http://technologysearchengine.Org/**)**

Find great technology-related resources by making the use of this search engine.

- **Current index to statistics (**http://www.Statindex.Org/**)**

If project involves needing some stats, use this search engine to find the latest.

- **Inspec (**http://www.Theiet.Org/publishing/inspec**)**

Search through inspec to find over 11 million bibliographic abstracts related to work in science and technology.

- **Citebase (**http://www.Citebase.Org/**)**

This experimental site will let the researchers to search through abstracts to find information that best suits your needs.

Search Engines for Social Science

- Find great information on sociology, psychology, anthropology and more by using these search sites.

- **Behavioral brain science archive** (http://www.Bbsonline.Org/bbsprints.Html)

Find articles related to psychology and brain science in the extensive searchable archive located on this site.

- **Social science research network** (http://www.Ssrn.Com/)

Join this research network to get easy access to the best and latest articles released on the social sciences.

- **Psycline** (http://www.Psycline.Org/)

This search engine lets you quickly find and access articles from psychology and social science journals on the web.

- **Social science citation index (**http://thomsonreuters.Com/products_services/science/science_products/hts/a-z/social_sciences_citation_index**)**

While not free, this site is a valuable resource, letting researchers quickly search through citations to find what you need.

- **The socioweb (**http://www.Socioweb.Com/**)**

If sociological resources are what you need, this site has got you covered with an easy-to-use search engine.

- **Wikiarc (**http://www.Google.Com/cse/home?Cx=005979862114578360618:m4tyzwl8izq**)**

This custom search engine makes it simple to find archaeology resources.

- **Encyclopedia of psychology (http://www.Psychology.Org/):**

Look up basic information about psychological terms and history on this site.

Search Engines for History

- Try out one of these search engines to find excellent resources for the study of history

- **David Rumsey map collection (**http://www.Davidrumsey.Com/view.Html**)**

This site is home to an archived and searchable historical map collection that has a lot to offer a wide range of historians.

- **Genesis (**http://www.Londonmet.Ac.Uk/genesis**)**

Take a closer look at women's history through the search results delivered by this site.

- **Footnote (**http://www.Footnote.Com/**)**

Search through original documents and archives uploaded by users on this social history site.

- **Internet modern history sourcebook (**http://www.Fordham.Edu/halsall/mod/modsbook.Html**)**

Researchers can either search or browse through this site that collects the best resources on the web for researching modern history.

- **History guide (**http://www.Historyguide.De/**)**

Use this german search engine to get results for the best history sites on the web.

- **History buff (**http://www.Historybuff.Com/**)**

On this site, researchers will be able to search through a great collection of primary source material, all free to use.

- **Digital history (**http://www.Digitalhistory.Uh.Edu/**)**

Researchers can search through this site, as it's full of primary documents, multimedia and more.

- **Ancient history sourcebook (**http://www.Fordham.Edu/halsall/ancient/asbook.Html**)**

Search this site to find the best resources to use for any ancient history project.

- **History and politics out loud (**http://www.Hpol.Org/**)**

Give this site a try to find a wealth of audio recordings from famous speeches.

- **History engine (**http://historyengine.Richmond.Edu/**)**

Search through the articles on this site, or add your own, to start researching historical topics.

Search Engines for Business and Economics

▶ Through these search engines, researchers can bring up journal articles, business information and market details.

▶ **Bpubs (**http://www.Bpubs.Com/**)**

This search engine may be used to find the kind of business publications and articles needed for research.

▶ **Virtual library of labour history (**http://www.Iisg.Nl/w3vl**)**

Study the history of the working world a little more closely with the resources provided by this search tool.

▶ **Econlit (**http://www.Aeaweb.Org/econlit/index.Php**)**

Delve into a library of economics journal articles and publications by using this search engine.

▶ **National bureau of economic research (**http://www.Nber.Org/**)**

Search through this site to find out more about the research done by this organization.

- **RePec (**http://repec.Org/**)**

The research papers in economics site is a great place to find articles and information on economics for whatever projects you have in mind.

- **Inomics (**http://www.Inomics.Com/cgi/show**)**

Designed just for economists, this site is a great place to search for courses, conferences and more.

- **Dailystocks (**http://www.Dailystocks.Com/**)**

Search for stocks that you follow on this site to monitor the ups and downs of the market.

Search Engines for Reference Material

Answer basic questions of users with these useful search engines and sources of reference.

▶ **Blooms bury magazine research centre (**http://www.Bloomsburymagazine.Com/ARC**)**

Search through quotations, a thesaurus, art, myths and more on this reference site.

▶ **Merriam - Webster dictionary and thesaurus (**http://www.Merriam-webster.Com/**)**

Find definitions and synonyms on this great reference site to bookmark.

▶ **References.Net (**http://www.Searchengineguide.Com/links/jump.Cgi?Id=5465**)**

This site provides all the reference material, researchers could ever need.

▶ **Quotes.Net (http://www.Searchengineguide.Com/links/jump.Cgi?Id=5463)**

Need a quote? You'll likely find the one you were thinking of here.

▶ **Literary encyclopedia (**http://www.Litencyc.Com/**)**

This literary search engine will let you search an author by name, a book title, or even a particular topic.

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