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An evaluation on search engines for health sciences

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The Internet is now the major worldwide Health information communication tool. To avoid waste of time, improved search engines are needed, in terms of accuracy and efficiency. The medical community has been facing the problem of inflation of medical information. Due to information explosion, it is very difficult to find accurate information. The paper describes various search engines which are very much useful for health care professionals.

Key words: Health science, medical science, medical informatics, informationist.

INTRODUCTION

A search engine is a term commonly used to refer to a web search engine. A Web search engine is a tool designed to search for information on the world wide web. The search results are usually presented in a list and are commonly called hits. The information may consist of web pages, images, information and other types of files. Some search engines also mine data available in databases or open directories. Unlike Web directories, which are maintained by human editors, search engines operate algorithmically or are a mixture of algorithmic and human input.

Health professionals and researchers need information from reputable internet sources to accomplish their research work and patient care. Unfortunately, the Web has a large number of documents that- are irrelevant to their work, even those documents that purport to be "medically-related". The internet and its distributed un-organized repositories of information have compounded the problem of information retrieval. In addition to information overload, there is the vocabulary problem with respect to the retrieval of relevant information from systems. Often, a health information searcher is uncertain about his exact questions and unfamiliar with medical terminology. Health information searcher has several unique requirements that distinguish itself from traditional Web search. The lack of diversity problem is aggravated by the nature of health web pages. Hence, search results provided by existing Health Web search engines often contain much semantic redundancy, which cannot be easily handled by existing methods for identifying near duplicate documents or result diversification. To find useful health information, the

searcher often has to go through a large number of Web pages laboriously. (<http://www.bettycjung.net/Sesiteb1.htm>). The web continues to grow at staggering rates. Automated search engines are increasingly unable to turn up useful results to search queries. With the help of the search engine, we can find authoritative, consumer-oriented health and medical information.

SEARCH ENGINE

A search engine is an information retrieval system designed to help find information stored on computer systems, such as on the World Wide Web, inside a corporate or proprietary network, or in a personal computer. The Search Engine allows one to ask for content meeting specific criteria (typically those containing a given word or phrase) and retrieves a list of items that match those criteria. Search Engine use regularly updated indexes to operate quickly and efficiently (wikipedia) (<http://en.wikipedia.org/wiki/Search-engine>).

Most of the Web Search Engines allow the searcher to use Boolean logic and truncation in search statements, typically, a Search Engine Works by sending out a spider to fetch as many documents as possible. Another programme, caked an indexer, then reads these documents and creates an index based on the words contained in each documents. Each Search Engine uses a proprietary algorithm to create its indices ideally, only meaningful results are "return query" (<http://www.medinfo.guide.net>).

A search engine is a programme that searches documents

Table 1. Summary of search engines.

MedWorm	GoPubMed
WebMD	Relemed
Daily Med	Hippocrates
MedHunt	Medical Word search
MedInd	IndMED
Open Med	BIOME
BioMedNet	CDC
CenterWatch	Cochrane Library
e-Medicine	Free Medical Journals
PubMed	WHO
MedNet	MDChoice
Healthatoz	Health Finder
Healthline	Health on Net
MedlinePlus	Medscape
Search Medica	Medical Crawler
Scirus	Healia
Medstory	All Health Net
Medical World Search	World Healthcare.net
iMedix	Flex Finder
Health in India	MedMark
Achoo	Dr Koop
Cliniweb international	Health Web
NHS Direct	MedPortal
Healthinsite	Intute

documents for specified keywords and return a list of the documents where the keywords were www.medinfoforge.net (<http://www.hyperdictionary.com/dictionary/search+engine>).

The word net dictionary defines search engines as “a computer problem that retrieves documents or files or data from a database or from a computer network especially from the internet”.

The computing dictionary defines search engine “A remotely accessible programme that lets you to do keyword searches for information on the internet. There are several types of Search Engines; the search may cover titles of documents, URLs, header, or the fulltext” (www.hyperdictionary.com) (Table 1).

HEALTH SEARCH ENGINES

MedWorm is a medical RSS feed provided as well as a Search Engine built on data collected from RSS feeds. RSS stands for really simple syndication and it is a technology used to simply publish and gather details of the very latest information on the internet (<http://www.medworm.com>).

GoPubMed is a knowledge-based search engine for biomedical texts. The Medical Subject Headings (Me SH) serve as “Table of contents” in order to structure the over

16 million articles of the MEDDLINE data base (<http://www.gopubmed.com>).

WebMD is a great one-stop medical information site. WebMD also has a lot of interesting interactive calculators, quizzes and other fun stuff that helps you understand medical information a bit easier (<http://www.webmd.com>).

Relemed is a new Search Engine from the University of Virginia, School of Medicine that searches PubMed medical literature by assigning relevance to results in addition to just looking for keywords (<http://www.relemed.com>).

Daily Med provides high qualitative information about marketed drugs. This web site provides health information providers and the public with a standard, comprehensive, up-to-date, look-up and download resource of medication content and labeling as found in medication package inserts (<http://www.dailymed.nlm.nih.gov/dailymed/about.cfm>).

Hippocrates is a general Search Engine, an innovative and state-of-the-art search application that makes it possible for any one to simply type in a medical term and get a detailed, formatted report on that disease, condition or medication within a few second (<http://www.chennaionline.com/hippocratesweh>).

MedHunt Suggests alternate spellings in several languages for misspelled terms. Searches human reviewed sites and computer indexed sites (<http://www.hon.ch/MedHunt/>).

Medical Word search (<http://www.mwsearch.com/mwsframetemplate.htm?http://www.mwsearch.com/>).

MedInd provides online access to full-text of Indian biomedical periodicals to the users in within and outside India (<http://www.medind.nic.in/>).

IndMED is a database covering prominent peer reviewed Indian biomedical journals. It's a database designed to provide medical professionals/researchers/students and the medical library professional quick and easy access to Indian literature (<http://www.indmed.nic.in/>).

OpenMed: OpenMED@NIC is an open access archive for Medical and Allied Sciences. Here authors / owners can self-archive their scientific and technical documents (<http://www.openmed.nic.in/>).

BIOME is a collection of gateways which provide access to Internet resources in the health and life sciences for the medical professionals (<http://www.intute.ac.uk/healthandlifesciences/>).

BioMedNet is an Internet community for biological and medical researchers; service includes full-text journals and viewing these requires payment of subscription fee (<http://www.biomednet.com>).

Centre for Disease Prevention (CDC) Provides information on chronic diseases, injuries and disabilities and guidelines on their prevention. A premier federal public health agency (<http://www.cdc.gov>).

CenterWatch Clinical Trials Listing Service is an inter-

national listing of clinical research trials giving information about physicians and medical centers (<http://www.centerwatch.com/>).

Cochrane Library contains high-quality, independent evidence to inform healthcare decision-making (<http://www3.interscience.wiley.com/cgi-bin/mrwhome/106568753/HOME?CRETRY=1&SRETRY=0>).

eMedicine.com is clinical review articles both for the professional and the consumer (<http://www.emedicine.com>).

FreeMedicalJournals.com - Listing of magazines that provide free access to articles. A few offer current articles, some offer free access archived articles. Listings by title or by specialty (<http://www.FreeMedicalJournals.com>).

PubMed - The National Institutes of Health now offer free access to MEDLINE®, the best-known database of medical literature. Full-text of the articles abstracted here can be ordered from local medical libraries (<http://www.pubmed.gov>).

WHO: An International health authority (<http://www.who.int>).

Premier Medical Journal Search (<http://www.nlm.nih.gov/hinfo.html>).

Med Nets is an international medical resource featuring specialty search engines free and online (<http://www.mednets.com>).

MDchoice- Health and medical information Search Engine for healthcare professionals and consumers (<http://www.medchoice.net>).

HealthAtoZ: This is aimed at consumers and includes a search engine, a chat with experts section and several categories with health advice and news (<http://www.healthatoz.com>).

Healthfinder : A free gateway to reliable consumer health and human services information healthfinder can lead you to selected online publications, database, websites and support and self help groups, as well as the government agencies and for non profit organizations that produce reliable information for the public (<http://www.healthfinder.gov>).

Healthline.com is a medical information Search Engine solely dedicated to finding medical information online and it offers medically filtered results developed by trained medical personnel (<http://www.healthline.com>).

Health on the Net Foundation offers Search Engine such as med hunt, which performs free text searches for web sites and categorizes the result as either Honored or sites that did not meet HON's criteria and HON select, which searches web site using MESH subject headings for faster, richer search results (<http://www.hon.ch>).

MedlinePlus was develop by the National library of medicine to provide consumer health information. It includes guides by health topics, as well as dictionaries, directories, and information on organizations (<http://medlineplus.gov>).

Medscape is a site that allows users (consumer or

professional) to search its many database options such as Medical images, News, information for patients, Clinical content, MEDLINE, AIDSLINE, and Drug Info. A "Today's Headline" section is updated daily to provide fresh news for users (<http://www.medscape.com/>).

Search medica is a series of free medical search engines built by doctor for doctors and other medical professionals with localized versions for UK, USA, France and Spain (<http://www.searchmedica.com>).

Medical crawler: a leading medical Search Engine (<http://medical.crawler.net>).

Scirus: It is a free web search engine for scientific information. It uses sophisticated search technology to create the world most comprehensive science-specific index (<http://www.scirus.com>).

Healia is the premier consumer health search engine for finding high quality and personalized health information on the web (<http://www.healia.com/healia/>).

Medstory search engine results are based on intuitive search technology, which provides prequalified information to consumers and health professionals conducting health-related research (<http://www.medstory.com>).

Allhealthnet.com: is a global medical Search engine. A comprehensive sources of medical information available on the web (<http://www.allhealthnet.com>).

Medical World Search: This tool has the ability to query other search engines and also provides a discussion forum, medical spelling and drug acronym devices (<http://www.mwsearch.com>).

Worldhealthcare.net: A UK base medical search engine providing informative resources from around the globe (<http://www.worldhealthcare.net>).

iMedix is a community powered health search engine, enabling people to easily find and share health information in order to make better health-related decision (<http://www.imedix.com>).

FlexFinder queries multiple medical resources in parallel, and combines the results based on relevance (<http://www.flexfinder.com>).

Health.inindia.com: Medical search engine that searches through the top medical information portals across the globe and delivers medical/ health information (<http://www.health.inindia.com>).

MedMark: It is an incredible search engine in English from overseas that provides extensive medical resources by Medical Specialty (<http://www.medmark.com>).

Achoo: Achoo's goal is to be "the most comprehensive healthcare information site on the Internet." To meet this goal, each of its indexed sites focuses on at least one aspects of healthcare, including: clinical health, alternative health, and business aspects of the healthcare field (<http://www.achoo.8media.org>).

There are number of many medical search engines existing for retrieval of medical information for the medical professionals. Some of them are CliniWeb international, drkoop.com, HealthWeb, NHSdirect, Med

portal, Healthinsite.gov.au, Intute, Welcome Trust etc.

MEDICAL SPECIALTY SEARCH ENGINES

Especially, Search Engines are able to focus on different subject areas, such as health and medicine. An advantage to using a specialized search engine is retrieving fewer, but hopefully more relevant results.

Specialized search engines have developed with the aim to make searching easier by identifying website according to established criteria, to provide a specific index with medical or health content.

Often, it can be useful to use a search engine that specifically looks for a type of document or information. For example, if you were looking specifically for medical information, using a standard search engine might leave you shifting through hundreds of web sites while using a search engine that specializes in medical information would likely yield more relevant results (<http://www.library.tufts.edu/hsl/subjectguides/searchtools.html>).

Mesothelioma is a specialized search engine devoted to lung cancer (<http://www.mesothelioma-search-engine.com/>).

Dr.Walker's specialty medical Search Engine: The Web's Best Medical Specialty Database Searches in the Areas of AIDS, Cancer, Cardiology, Dermatology, General Medicine, Neurology, Neurosurgery, Oncology, Ophthalmology, Orthopedics, Urology, Research etc., (<http://www.askdrwalker.com>).

Cardioguide.com – Cardiology resource search engine (<http://www.cardioguide.com/cardiology>).

Pharmocracy.com is the world's first search engine dedicated solely to prescription medications (<http://www.pharmocracy.com>).

PharmaWeb - Search engine focusing on pharmaceutical and health-related information (<http://www.pharmaweb.com>).

Hardin MD's purpose is to provide easy access to comprehensive resource lists in health related subjects. Lists that are in Hardin MD are checked regularly to see that they are being well maintained (<http://www.lib.uiowa.edu/hardin/md/>).

META SEARCH ENGINE

A meta-search engine is a search engine that sends user requests to several other search engines and/or databases and returns the results from each one. Meta-search enables users to enter search criteria once and access several search engines simultaneously. Since it is hard to catalogue the entire web, the idea is that by searching multiple search engines, they are able to search more of the web in less time and do it with only one click. The ease of use and high probability of finding the desired page(s) make metasearch engines popular

with those who are willing to weed through the lists of irrelevant 'matches'. Metasearch engines are sometimes used in vertical search portals and to search web sites" (<http://en.wikipedia.org/wiki/Metasearch-engine>).

Omni Medical Search at the time of this writing brings back search results from 30 different sources and search up to 12 different medical search engines at one time. We can focus the search using the dropdown menu on the home page, in addition, Omni Medical Search has tabbed search options for more medical search information (<http://www.omnimedicalsearch.com/>).

Layyous.com is regarded as one of the largest medical sites in the Middle East which provides simplified descriptions, pictures and video clips of medical topics relating to gynecology, pregnancy, female and male infertility, assisted reproductive technologies and Ultrasonography (<http://www.layyous.com/e-index.htm>).

Mamma.com: A smart meta-search engine, every time the word mamma is typed, it simultaneously searches a variety of engines, directories and deep content sites, properly formats the words in a virtual database, eliminates duplicates and displays them in a uniform manner according to relevance. Mamma.com. helped to introduce meta-search to the Internet as one of the first of its kind (<http://www.mamma.com>).

Search-22 is a very special directory of search engines. There are thousands of great search engines online that you may have never heard of. Search-22 provides direct access to some of these search destinations, making it easy for you to write your query one time and get the results from different resources by clicking the different search engine buttons (<http://www.search-22.com/generalreference/health.php>).

Vivisimo is a search engine for medical information that searches Harrison's Online, the Merck Manual, PubMed, the TRIP database and Google, all at the same time (<http://www.vivisimo.com>).

Vioxx Search Engine offers news items and listings of medical and legal web sites that have information and services relating to the drug Vioxx (<http://www.vioxx.com>).

MEDICAL MULTIMEDIA SEARCH ENGINE

Search engine that focus on specific file formats, such as photographs, audio, and video, have appeared in recent years. These search engines can be extremely useful when attempting to locate multimedia information, like corporate speeches, oral histories, or recent broadcast news events. Of course, they can also find that latest MP3 file of a groovy song, allow one to find a live radio broadcast, or find image of favorite cartoon characters. General search engine can yield frustrating results when attempting to find a specific type of multimedia such as image or audio files. Fortunately, there are a variety of multimedia search engine on the Web (Bansal, 2001).

Med Museum is a medical site relating to the study of different organs and diseases of the human body (<http://www.medmuseum.com>).

Multimedia Medical Research Library (MMRL) contains medical subject categories for browsing and a searchable index (<http://www.med-library.com/medilibrary/>).

Medical rounds-Multimedia on demand education: There are hundreds of free, current and topical medical presentations for you to view; Medical Rounds web casts presentations and conferences for many contributing medical groups. All talks are originally presented at recognized quality grand rounds or professional meetings (<http://www.medicalrounds.com>).

Bristol Biomedical Images Archive is a categorized archive of 20,000 images. A search engine retrieval of images on specific topics or conditions (<http://www.brisbio.ac.uk>).

The Invisible Web: The deep Web (or deep net, invisible Web or hidden Web) refers to World Wide Web content that are not part of the surface Web indexed by search engines. The Search Engine of Search Engines is a searchable directory of over 10,000 databases, archives and search engines that contain information that traditional search engines have been unable to access. The "invisible web" consists of searchable database, password-protected sites and documents that are hidden by firewalls, which are inaccessible to the spiders and web crawlers that compile indexes for the general purpose search engines. The Search Engine of search engines, created by Intelliseek, is another helpful search engine site. Many search engines fall into the "invisible web", since their index of links is stored in a database rather than on static Web pages. This site also lists all links in a subject directory (Vijay and Murthy, 2009: p3) (<http://www.invisibleweb.com>).

Conclusion

Without sophisticated search engines and without knowing a specific universal resource locator (URL), it would be virtually impossible to locate anything on the web. Web.Dot.com is raging and seems to be making impact on every industry (Wukovitz, 2001). Changes in

familiarity with each search engine in order to get the most from Internet searches. As there is no standard vocabulary or comprehensive cataloguing and quality filter, reaching the accurate and most relevant information is difficult many times. But still, Internet has a rich source of information to offer for the users to keep track with the new developments in the field. The Internet is now the major worldwide medical communication tool. To avoid waste of time, improved search engines are needed, in terms of accuracy and efficiency. The medical community has been facing the problem of inflation of medical information. Although this is not the complete list of available search engines as number of search engines are added on the web daily. But Search engines are very much helpful to Librarian for Ix.

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the ways that medical information is stored, accessed, and retrieved have created a wealth of health care information from which the user can make use of resources. Medical questions from library patrons can cover a wide variety of topics. To search the millions of documents available on the web, a number of tools for search are available. Each search engine has its strengths and weaknesses. It is important to build some