

The Role and Importance of Search Engine and Search Engine Optimization

Saurabh Kumar

M Tech Scholar, Department of Computer Science and Engineering,
Dr. A.P.J Abdul Kalam Technical University, Lucknow (U.P)

Abstract: Search Engines are basically designed for searching the relevant content. Search Engine Optimization is collection of techniques and practices by which any website can increase ranking in search engine. Search Engine Optimization is divided into two parts, first one is on page and second one is off page. This paper describes the role, importance and working of search engine. And also describe about the concept and overview of search engine optimization and its types.

Keywords: Crawler, Search Engine, SEO, Website.

I. INTRODUCTION

Search engine is a web software program or web based script available over the Internet that searches documents and files for keywords and returns the list of results containing those keywords. Today, there are numbers of different search engines available on the Internet, each with their own techniques and specialties. Search Engine Optimization is a technique to improve visibility of a website in search engine.

II. BACKGROUND

In search engine industry Archie was the first search engine, which was used to search for FTP (File Transfer Protocol) files and in the other side the first text based search engine is known as Veronica. Because large search engines contain millions and sometimes billions of pages, many search engines are not only just searching the pages but also display the results depending upon their importance. This importance is commonly determined by using various algorithms. There are currently different types of search engines available like Google, Yahoo, Ask.com, Bing, Alta vista etc. these are displayed in Figure 1.



Figure 1: Different Types of Search Engines

In the diagram below, there is a detailed example that, how a search engine works. The working of search engine is divided into two parts first one is crawling and second one is indexing. A Crawler is a program that retrieves web pages, commonly for use by search engines. In Crawling process, spider or crawler visits the pages that will be included in the search and grabs the contents of each of those pages. After the crawling process indexing process is started in database. In short, the working of search engine is basically divided into two parts, first one is crawling and second one is indexing. Often this involves stripping out stop words, grabbing the location of each of the words in the page, the relevancy they occur, back links to other pages, images and so on. This data is used to rank the page and is the primary method of a search engine uses to determine if a page should be shown and in what order. Finally, once the data has been processed it is often broken up into one or more files, moved to different

computers or servers, or loaded into memory where it can be accessed when users perform a search[1].

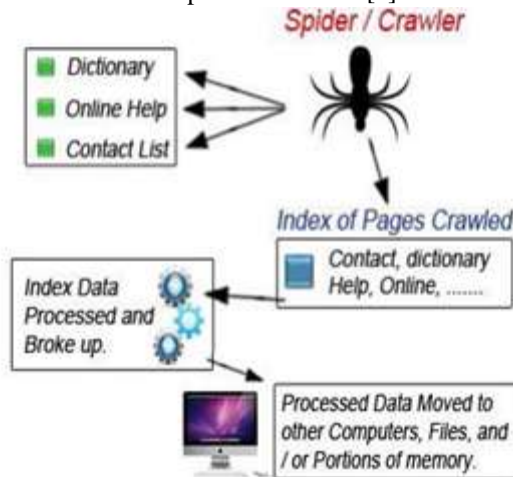


Figure 2: Spider or Crawler Methodology

Web Crawlers follow links from one page to another and index the content. It is difficult for crawler to visit a website on regular basis. Sometimes crawlers may not end up visiting the website for a month or two, but now all the search engines like Google is working on real time content update algorithm. The Block Diagram shown below describes the working of Google.

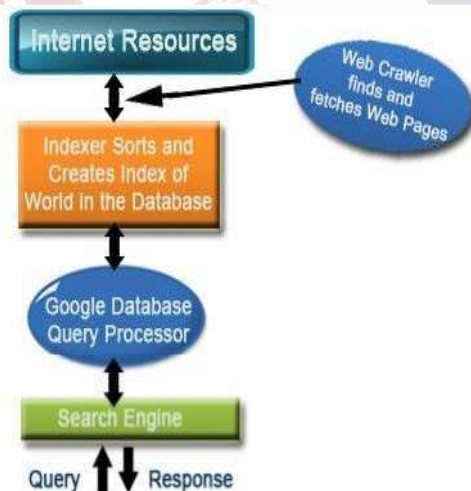


Figure 3: Working of Google Block Diagram

III ASSORTMENT OF SEARCH ENGINE:

Search Engine is divided into following types:

Full Text Search Engine: Full Text Search Engine retrieves information from internet, establish database and retrieve the records according to user’s query. It can be divided into two parts: first one has its own crawler. Another one is to hire other search engine’s database.

Directory Search Engine: We cannot call it a true search engine. It retrieves all the entries of directory listing.

META Search Engine: It provides search results from multiple search engines simultaneously according to user’s query.

Vertical Search Engine: Vertical Search Engine focuses on specific search field and search demand [2].

There are many of search engines like Google, Yahoo, Bing and Ask but most popular search engine is Google. According To Study more than 80% of first visits to a website come from web search. And in these visits, more than 76% use Google's Search Worldwide. Furthermore, it shows that "84%" of Google searchers never go beyond the second page of search results, and 65% hardly ever click on paid or sponsored results. Therefore, getting top position in search engine results is critical to the constant flow of users to the websites, and this is where the value of Search Engine Optimization comes in. In Order to determine the most relevant pages, the search engine algorithm has the daunting task of parsing and analyzing HTML pages in order to categorize them. To bring order to the Internet by helping to categorize web pages and increase their visibility, Search Engine Optimization (SEO) has increased popularity in recent years.

What is Search Engine Optimization?

In a layman language about Search Engine Optimization, whenever we enter a query in a search engine and press enter key we get a list of web pages as a results that contain that putted query term. Users normally visit those websites or web pages that are at the top of this list as they identify those to be more appropriate to the query applied. If we have ever wondered why some of

these websites rank better than the others then we must know that it is because of a great web marketing technique called Search Engine Optimization (SEO). Search engine optimization is a best practice that includes right strategies, powerful techniques and right tactics used to enhance the amount of users to a website by obtaining a high ranking placement in the search results page of a search engine (SERP) -- including top search engines like Google, Bing, Yahoo and others[3][5].



Figure 4: Search Engine Optimization

SEO helps a webmaster or a website owner to ensure that a site is reachable to a search engine and develops the chances that the website will be found by the search engine.

It is a best practice for web users to not click through pages and pages of search results, so where a site ranks in a search is essential for directing more and more user traffic toward the website. If a website naturally ranks in organic results of a search, the chance to visit that site will be increased.

SEO is the method of improving the visibility of a website or a web page in a search results. In common, the earlier (or higher ranked on the search results page), and more frequently a site appears in the search results list, the more visitors it will receive from the search engine's users. SEO may target different kinds of search, including image search, local search, video search, academic search, news search and industry-specific vertical search engines. As a great Web Marketing Strategy, SEO considers how search engines work, what people search for, the actual search terms or keywords

typed into search engines and which search engines are preferred by their targeted audience. Optimizing a website may involve editing its content, HTML and associated coding to increase its relevance to specific keywords and to remove barriers to the indexing activities of search engines.

Flavors of Search Engine Optimization (SEO) We can divide search engine optimization technique into three flavors:



Figure 5: Search Engine Optimization Flavors

White Hat SEO

The proper and best way to optimize any website is called WHITE HAT SEO technique. This type of optimization is well supported and appreciated by all search engines, mainly by Google. Because this technique of SEO is a natural way to achieve better results, if the website is regularly updated with quality and unique content, gets better links from relevant niche websites and blogs. This means that the webmaster does not take a single attempt to mislead search engine and does not try to cheat.

Gray Hat SEO

If the webmaster uses some irrelevant techniques to optimize their website is known as GRAY HAT SEO technique, simply we can say if the optimizer may buy or exchange links with other websites to get better search engine ranking but it will be not accepted by the search engines. This technique is not long term for search engine ranking.

Black Hat SEO

If a webmaster or optimizer is doing spamming in link building or making irrelevant links with some irrelevant niche websites, this will be considered as Black Hat SEO Technique. This technique of SEO is very

dangerous for long term results because as the regular updates in search engine algorithm crawler will easily judge the spammed techniques to optimize websites.

Types of Search Engine Optimization

We can divide the search engine optimization techniques into two parts. First one is On Page SEO and another is Off Page SEO. The search engine optimization techniques divided into two parts:

On Page SEO: in this technique, the optimization part would be done in the coding of website.

On Page SEO Elements:

- ❖ **Title Tag:** the title tag is the really important for good search engine ranking. Search engine crawl the content of this tag on the priority basis. A page title is the first thing, a search engine will look.
- ❖ **Meta Tag:** there are two primary Meta tags used in Search Engine Optimization, that is keyword and description tag.
- ❖ **Alt Attribute:** Search engine only reads the alt attribute of the image tag.
- ❖ **Header tags (H1, H2 and H3):** HTML Heading Tags are equally important for search engine point of view.
- ❖ **Permalinks of Web Pages:** The Meaning of Permalink is URL (uniform resource locator) of a webpage. It should be keyword oriented and SEO friendly.
- ❖ **Internal Linking:** Internal Links are hyperlinks that point to the same domain. This factor is also important for search engine point of view.
- ❖ **Keyword Density:** Keyword Density is the percentage of times a keyword or phrase appears on the web page compared to the total number of words on the page. Keyword Density is really important in terms of SEO.
- ❖ **Sitemap:** In Sitemap, all important website links are available with date and updated information of page. Search Engine will crawl the sitemap links on the priority basis [4].
- ❖ **Off Page SEO:** This is the technique for making back links. Back links are normally termed as link

back from other website to our website. Back links are important for SEO because search engine algorithms give credit, if any website has large number of back links. As well as back links increase, website popularity will increase.

Search Engine Optimization Benefits:

- ❖ **Popularity:** By this technique popularity will increase.
- ❖ **Increase Visibility:** Once a website has been optimized, it will increase the visibility of website in search engine. More people will visit website.
- ❖ **Targeted Traffic:** Search Engine Optimization can increase the number of visitors to the website for the targeted keywords.
- ❖ **High ROI (Return of Investments):** An effective SEO campaign can bring a high return of investment than any other marketing. it will increase the volume of sales.
- ❖ **Online Marketing And Promotion:** best strategy for promotion [6].

IV. CONCLUSION

Search Engine is really useful tool in present era of web. There are many of search engines available in market, but most popular search engine is Google. So for getting topmost results in web, we have to use search engine optimization technique. Both on page and off page search engine optimization techniques are important for better search result. In the three flavors of SEO, White Hat SEO technique is the best and long term as well.

REFERENCES

- [1] Sergey Brin and Lawrence Page, "The Anatomy of a Large-Scale Hypertextual Web Search Engine," [Online]. Available: <http://infolab.stanford.edu/~backrub/google.html>
- [2] Meng Cui, Songyun Hu, "Search Engine Optimization Research For Website Promotion, Transport Management College, Dalian Maritime University, Dalian, 116026, China". [Online].

**International Journal of Engineering Research in Computer Science and Engineering
(IJERCSE)**

Vol 3, Issue 8, August 2016

Available:[http://www.ftsm.ukm.my:8080/kt/attachme
nts/article/69/06113701.pdf](http://www.ftsm.ukm.my:8080/kt/attachme
nts/article/69/06113701.pdf)

[3] Joeran Beel, Bela Gipp, Erik Wilde. UC Berkeley School of Information." Academic Search Engine Optimization (ASEO): Optimizing Scholarly Literature for Google Scholar & Co." [Online]. Available: <http://www.beel.org/files/papers/2010-ASEO--preprint.pdf>.

[4] "10 SEO Techniques All Top Web Sites Should Use". [Online]. Available: <http://freelancefolder.com/10-top-seo-techniques/>.

[5] "Search Engine Optimization". [Online]. Available: http://en.wikipedia.org/wiki/Search_engine_optimization.

[6] "Ultimate Benefits of SEO". [Online]. Available: <http://www.nextsbd.com/seo/benefits-of-seo.php>.

