

# Search-Engine Optimization

Associate Prof. and Hod. Neeraj Prakash Shrivastava, Keerti Rajawat

Department of CSE, Anand ICE, Jaipur-302012, Rajasthan, India;

Neeraj.shrivastava@anandice.ac.in, rajawatkeerti@gmail.com

**Abstract** – Search Engine Optimization (SEO) is the process of affecting the visibility of a web page in a web search engine's unpaid result. It is the process of getting traffic from the “free”, “organic” or “natural” search results on search engines. Search Engine Optimization is a strategic technique to take a web document in top search results of a search engine. Online presence of an organization is not only an easy way to reach among the target users but it may be profitable too if optimization is done keeping in view of the target users as of the reason that most of the time users search out with the keywords of their use rather than searching the organization name, and if the page link comes in the top positions then the page turns out to be profitable. This works describes the tweaks of taking the page on top position in Google by increasing the page rank which may result in the improved visibility and profitable deal for an organization. Google is most user-friendly search engine proved for the Indian users, which gives users-oriented results. In addition, most of other search engines use Google search patterns. So, if a page is optimized in Google it is optimized for most of the search engines.

**Keywords**– SEO, Organic results, Paid results, web crawler, meta tags, Search engine result page, Querying, Indexing, Title tags.

## I. INTRODUCTION

Search engine optimization (SEO) refers to techniques that help your website rank higher in organic (or “natural”) search results, thus making your website more visible to people who are looking for your product or service via search engines. SEO is part of the broader topic of Search Engine Marketing (SEM), a term used to describe all marketing strategies for search. SEM entails both organic and paid search. With paid search, you can pay to list your website on a search engine so that your website shows up when someone types in a specific keyword or phrase. Organic and paid listings both appear on the search engine, but they are displayed in different locations on the page. What about paid search? Yes, you can pay to have your website listed on the search engines. However, running paid search campaigns can be quite costly if you don't know what you're doing. Not to mention, about 88% of search engine users never click on paid search ads anyway. Because the sole purpose of a search engine is to provide you with relevant and useful information, it is in everyone's best interest (for the search engine, the searcher, and you) to ensure that your website is listed in the organic search listings. In fact, it is probably best to stay away from paid search all together until you feel you have a firm grasp on SEO and what it takes to rank organically.

## II. SEARCH ENGINE

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).

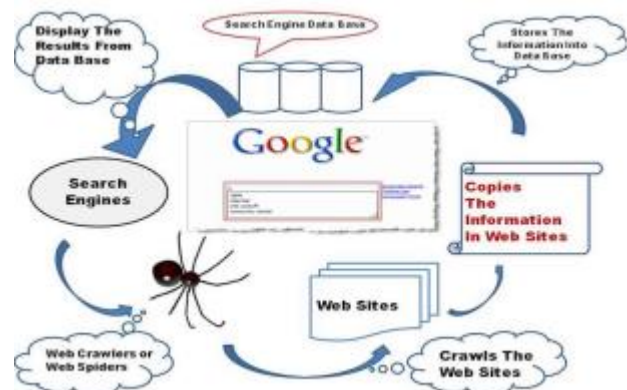


Fig. 1. Working of Google Search Engine.

Web search engines work by storing information about many web pages, which they retrieve from the HTML mark-up of the pages. These pages are retrieved by a Web crawler (sometimes also known as a spider) — an automated Web crawler which follows every link on the site. The site owner can exclude specific pages by using robots.txt. With the help of internet resource, the web crawlers find fetches the web pages and those web pages are indexed and are sorted by words in the database which is further process towards the Google database for query processor which is further carried towards search engine for response.

## III. SEARCH ENGINE OPTIMIZATION

Search engine optimization (SEO) refers to techniques that help your website rank higher in organic (or

“natural”) search results, thus making your website more visible to people who are looking for your product or service via search engines.



Fig. 2. Different Search Engines

### 1. SEO and Search Engines

Search engines are clearly foundational to SEO, but many organizations lack knowledge about how they work. Websites host a range of HTML documents, each with a unique Uniform Resource Locator (URL). A search engine enables Web searching by creating an index, a process transparent to the user, and responding to queries, a process that requires the user’s active participation.

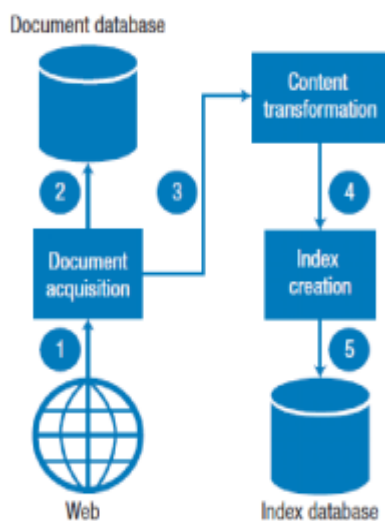


Fig. 3. Process of Indexing

Process of indexing involves the following steps:  
A web crawler, also known as a robot or bot, scours the Web to retrieve HTML pages.

The web crawler stores these pages in their original form in its search engine’s document Database.

The pages go through transformations, such as HTML tag and stop-word removal and Stemming. The transformation, conducted by the search engine, extracts significant textual content and information about links for indexing

The search engine creates indexes by generating direct and surrogate page representations, such as single words or phrases and their positional information on the page. It also notes information about incoming and outgoing links and generates a snippet.

The search engine stores indexes in its index database.

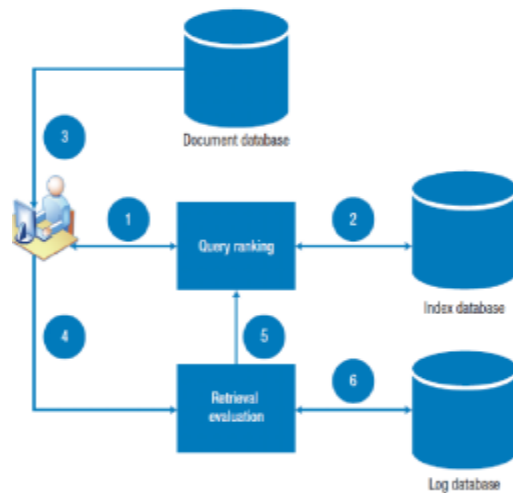


Fig. 4. Process of Querying.

Process of Querying involves the following steps:

The user employs a search engine’s browser to enter a search query—typically a single keyword or short phrase. As in step 3 of the indexing process, the search engine transforms the user’s query in canonical representation.

The search engine’s query-ranking algorithm generates a ranked list of URLs for documents it deems relevant on the basis of the index database and contextual information in the user query. The search engine then shows the snippets corresponding to the ranked URLs to the user in SERPs.

The user browses the snippets and clicks on certain ones to retrieve the corresponding full documents in their original form from the document database.

The search engine’s retrieval evaluation component helps the user further refine the search on the basis of feedback about the document’s relevance: the user explicitly indicates relevance (direct feedback) or clicks on relevant links (indirect feedback).

Using the relevance feedback, the search engine might reformulate the user query and re-execute it. This process repeats until the user is satisfied with the search results or ends the query session.

The search engine stores Meta information such as user queries, relevance feedback, and clicked snippets in the log database, which it uses to improve its search performance.

## IV. SEO TECHNIQUES

### 1. Website Content

Every webpage you create should have a thought-provoking headline to grab the reader’s attention, and should also include the keyword or phrase that the webpage covers. Other body formatting, such as bolding

certain keywords or phrases, can help stress the importance of phrases you are optimizing for.



Fig. 5. Website content enhancement.

## 2. URL Structure

The actual structure of your website URL can have an impact on the search engines' ability to index and understand your website's content.

Some website creation software will insert arbitrary numbers and code in the URL. Although this may be optimal for the software, it serves no other purpose. If you can edit the URL to include the title of your webpage, you should do so. In fact, some website creation software will automatically create URLs based off of your webpage content in order to eliminate this issue.



Fig. 6. URL Structure

## 3. Pictures with ALT Text

Not only are pictures a great way to break up sections of text, but they also serve as an opportunity to communicate with the search engines. Because search engines cannot tell what a picture is by scanning it, they look for clues in two places. Every picture you upload to your website will have a file name. When the picture is inserted on your website, the picture's file name actually lives in your website's sources code, or HTML. Since the search engines scan your website's code, you should use file names that describe the picture. For example, „red-tennis-shoesvelcro.jpg“ is much more useful than, „pic12345.jpg“.

Additionally, you can give the search engines an extra hand by including alt tags on all pictures on your website.

Alt tags are short snippets of code that allow you to tag each photo on your site with a short text blurb.



Fig. 7. Image with Alt text.

## 4. Title Tags and Meta Tags

Besides an actual text headline on your page, every webpage you create has a title tag. This is the text snippet that appears in the upper left corner or on the tabs of your web browser. Also, the title tag is the blue link that the search engines show when they list your webpage on the SERP. Title tags max out at 75 characters, so choose your words wisely. Meta tags are snippets of code you can include within your webpage's HTML. The Meta tags are usually located near the title tag code in the head of your HTML. There are two Meta tags – Meta description and Meta keywords.



Fig. 8. Title tags and Meta Tags.

## 5. Rich Headline Tags

When the search engine bots scan your webpages, they look for clues to determine exactly what your webpage is about. Keywords that are treated differently than most others on the page show the search engines that they are more important than other keywords on the page. This is why the use of headline tags within your page is so important. By using various headline tags, you not only make your webpage easier to digest from a reader's standpoint, but you will also give the search engines definitive clues as to what is important on the page.



Fig. 9. Headline Tags.

## 6. Internal Linking

When creating content for your website on your blog or on specific webpages, you may want to reference other pages on your website. You can reference these other

pages by inserting a link to another webpage within a specific webpage's content.

The use of anchor text is recommended when linking to another webpage or even another website. When anchor text is used, it implies that the page you are linking to is about the keyword or phrase you use as your anchor. This is yet another way you can help out the search engines.



Fig.10. Internal Linking.

## V. CONCLUSION

Search Engine today drive more than 85% of Internet traffic. Thus, if your website is not listed well search engines for the right keywords, your competitors are making money.

It is very important for website to have an effective Search Engine Optimization (SEO) plan in order to position the website well. It is a smart way of increasing your visibility online by saving time and cost of Marketing. But before going for SEO, one must understand how it works and the effects it can have on business.

Besides this there are certain things like service/product quality, customer relationship, pre-sale services, etc., which are the base of any business. One must keep in mind businesses can run successfully without SEO, but they cannot run without these things.

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