Search Engine Optimization Techniques

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Abstract

This paper represents how an optimization problem consists of maximizing or minimizing a real function by systematically choosing input values from within an allowed set and computing the value of the function can be solved. A program that searches documents for specified keywords and returns a list of the documents where the keywords were found. It uses a proprietary algorithm to create its indices such that, ideally, only meaningful results are returned for each query. A program that automatically fetches Web pages. They are used to feed pages to search engines. It crawls over the web and starts with a list of URLs to visit, called the seeds. As the crawler visits these URLs, it identifies all the hyperlinks in the page and adds them to the list of URLs to visit, called the crawl frontier. URLs from the frontier are recursively visited according to a set of policies. The large volume implies that the crawler can only download a fraction of the Web pages within a given time, so it needs to prioritize its downloads. The high rate of change implies that the pages might have already been updated or even deleted. 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. Whenever you enter a query in a search engine and hit 'enter' you get a list of web results that contain that query term. Users normally tend to visit websites that are at the top of this list as they perceive those to be more relevant to the query. SEO is a technique which helps search engines find and rank your site higher than the millions of other sites in response to a search query. SEO thus helps you get traffic from search engines. Although the basic principle of operation of all search engines is the same, the minor differences between them

lead to major changes in results relevancy. Choosing the right keywords to optimize for is thus the first and most crucial step to a successful SEO campaign. In the context of search engine optimization keyword density can be used as a factor in determining whether a web page is relevant to a specified keyword or keyword phrase.

1.Introduction

Search engine optimization (SEO) is the process of improving the visibility of a website or a web page in a search engines results page. Businesses operating in an online environment typically strive to promote their products and services on search engines. To gain more lead generation and ultimately customer's ongoing effort to improve a domain name, page rank and search engine performance is required. The key aim of a company's SEO effort is to increase traffic to their website. The following report addresses 9 key topics in detail, outlining how organisations can gain competitive advantage regardless of their industry or competitive environment. The key topics will be ordered as follows:

1. SEO for mobiles
2. Impact of social media
3. Tools for SEO campaigns
4. Page Rank
5. Best practice techniques in 2013
6. Process audit recommendations
7. Search engine market analysis
8. Understanding the impact of Project Panda
9. Understanding the impact of Project Caffeine

By examining these topics, organisations have the ability to focus on further developing their existing SEO[1] improvement efforts. SEO is constantly changing due to many factors, and it is vital for companies to be aware of the recent development and trends. In mathematics, computational science, or management science, mathematical optimization (alternatively,optimization or mathematical programming) refers to the selection of a best element from some set of available alternatives is referred as optimization. Search engine is really a general class of programs, the term is often used to specifically describe systems like Google, Alta Vista and Excite that enable users to search for documents on the World Wide Web and USENET newsgroups. A worldwide bulletin board system that can be accessed through the Internet or through many online services. The USENET contains more than 14,000 forums, called newsgroups, that cover every imaginable interest group. It is used daily by millions of people around the world. An online discussion group. Online services and bulletin board services (BBS's) provide a variety of forums, in which participants with common interests can exchange

open messages. Forums are some-times called newsgroups (in the Internet world) or conferences. A search engine works by sending out a spider to fetch as many docu-ments as possible. A program that automatically fetches Web pages. Spiders are used to feed pages to search engines. It's called a spider because it crawls over the Web. Another term for these programs is webcrawler[2]. A Web crawler is one type of bot, or software agent. In general, it starts with a list of URLs to visit, called the seeds. Web crawlers are mainly used to create a copy of all the visited pages for later processing by a search engine that will index the downloaded pages to provide fast searches. Crawlers can be used to gather specific types of information from Web pages,such as harvesting e-mail addresses. It is a computer program that browses the World Wide Web in a methodical, auto-mated manner or in an orderly fash-ion. A web search engine is de-signed to search for information on the World Wide Web and FTP servers. The search results are gen-erally presented in a list of results often referred to as SERPS, or "search engine results pages". FOAF (an acronym of Friend of a friend) is a machine-readable on-tology describing persons, their activities and their relations to other people and objects.

2. Objective

With the help SEO tool on Web Search Engine we can find:
• Track Ranking
• Track Page Rank
• Estimate Traffic
• Directory Submission
• Use G Analytics
• Main Referrers
• Submitting Your Site to Search
• Directories, forums and special sites
• Specialized Search Engines
• Paid Ads and Submissions

3. Latest SEO Techniques in 2013

The best SEO techniques have only changed minimally, as the most significant ranking factor practi-cally remained unchanged. Though, there are many entrepreneurs and business owners
who stay curious about the latest SEO techniques.
1) Content remains Emperor: In 2013, business's are ought to have a balance of 'human
friendly' content and 'search en-gine' friendly content. The poten-tial customers/current
contacts are purchasing these prod-ucts or services, therefore if the business's desire is to
become noticed in the search en-gines, having quality content will be the key to their online
success in 2013. Webpage titles are the backbone of the entire website traffic. A webpage
title is the primary item that ap-pears on Search results page, fol-

lowed by post URL and finally a snippet from the webpage. The choice of keywords, word limit and use of characters is vital to becoming noticed.

2) Page Speed/Load Time: Readers often become irritated with a slow load time of

websites. Search engines aim to provide its users with a great search experience. To achieve

this outcome, Google values load time and directs its users to websites that load faster.

Organisations need to be aware that not all browsers use a fast broadband connection. Internet speed on smart phones is also moderately slower, so it is vital businesses try to maximize page speed as much as possible. Several actions to achieve this technique include: Save all images in GIF or PNG format, Give proper dimensions to images, Use limited advertisements, Summarize your posts using the Read More link, Show only four-five posts at home page.

3) Original Photos & Videos: To make a website further interactive, businesses are required

to consider adding original photos and appealing videos to the website. While search engines

such as Google 'crawls' web pages, it searches for content that is varied. Optimizing the videos and photos for SEO purposes is additionally important. Following the introduction of image search technology, traffic through images cannot simply be avoided. Each image on

a website is a great source for quality traffic, if they are tagged correctly. With tags, images have no value unless it is declared by adding its description inside the alt text attribute.

4. Design & Explaination

Search engines perform several activities in order to deliver search results – crawling, indexing, processing, retrieving.

1.1. Crawling

First, search engines crawl the Web to see what is there. This task is performed by a piece of software, called a crawler or a spider (or Googlebot, as is the case with Google).Spiders follow links from one page to another and index everything they find on their way. Having in mind the number of pages on the Web (over 20 billion), it is impossible for a spider to visit a site daily just to see if a new page has appeared or if an existing page has been modified, sometimes crawlers may not end up visiting your site for a month or two.What you can do is to check what a crawler sees from your site.Crawlers are not humans and they do not see images,Flash movies, JavaScript,frames, password-protected pages and directories, so if you have tons of these on your site, you'd better run the Spider Simulator below to see if these goodies are viewable by the spider. If they are not viewable, they will not be spidered, not indexed, not

processed, etc. - in a word they will be non-existent for search engines.

1.2. Indexing[5]

After a page is crawled, the next step is to index its content. The indexed page is stored in a giant database, from where it can later be retrieved. Essentially, the process of indexing is identifying the words and expressions that best describe the page and assigning the page to particular keywords. For a human it will not be possible to process such amounts of information but generally search engines deal just fine with this task.Sometimes they might not get the meaning of a page right but if you help them by optimizing it, it will be easier for them to classify your pages correctly and for you – to get higher rankings

1.3. Processing

When a search request comes, the search engine processes it – i.e. it compares the search string in the search request with the indexed pages in the database.Since it is likely that more than one page (practically it is millions of pages) contains the search string, the search engine starts calculating the relevancy of each of the pages in its index with the search string. There are various algorithms to calculate relevancy. Each of these algorithms has different relative weights for common factors like keyword density, links, or metatags

1.4. Retrieving

The last step in search engines' activity is retrieving the results. Basically, it is nothing more than simply displaying them in the browser – i.e. the endless pages of search results that are sorted from the most relevant to the least relevant sites.

2. Research Work

Factors which depends for SEO[1] :

2.1.

eywords

Keyword density is the percentage of times a keyword or phrase appears on a web page compared to the total number of words on the page. In the context of search engine optimization keyword density can be used as a factor in determining whether a web page is relevant to a specified keyword or keyword phrase. In the early days of search engines, keyword density was an important factor in how a page was ranked. However, as webmasters discovered this and the implementation of optimum keyword density became widespread, it became a minor factor in the rankings. Search engines began giving priority to other factors that are beyond the direct control of webmasters[7].Choosing the Right Keywords to Optimize For Keyword Density

- Keywords in Special Places
- Keywords in URLs and File Names
- Keywords in Page Titles
- Keywords in Headings

Today, the overuse of keywords, a practice called keyword stuffing,

will because a web page to be penalized.

2.2. Links

Always add a trailing slash to sub-folder references. If you link like this:
href="http://www.sonukhanna.com/html", you will generate two requests to the server, the server will first add a slash to the address, and then create a new request like this: href="http://www.sonukhanna.com/html/"

Tip: Named anchors are often used to create "table of contents" at the beginning of a large document. Each chapter within the document is given a named anchor, and links to each of these anchors are put at the top of the document

2.3. Massive Link Structure To Avoid Rank For Keywords

Given below are the elements that constitute the massive link wheel. Figure1 represents the
structure of the link wheel.

5.3.1. Unique content

Content Is King. The more unique the content is, the search engines crawler visit your site more often and indexes the content. The website gains authority and chances of appearing in the SERPs increases. Unique content is more likely to get shared in social media. The recent Google Algorithmic update looks for social signals. The chances that the user re-visits your website in-

creases when he cites quality content.

5.3.2. Web 2.0 sites

Web 2.0 sites are nothing but the sites which allows us to create blogs and to share them. Set up free blogs on sites like Xanga.com, Blogger.com or WordPress.com. Manually submit the spun promo article with different TITLES to high PR sites. The key is to EMBED the YouTube videos. Use two links in the web 2.0 with one pointing to the money site and the other to one a random page.

5.3.3. Forum Profiles

It is another method that is to be considered. There are huge link juices in the do-follow forum profiles. This can be done in favour of the money site by spending some valuable time in penning the intro posts and links in the footer pointing to the money site. Here, manual forum posting has more authority than automated ones.

5.3.4. Social networks (Facebook, Twitter, etc)

Social media optimization (abbreviated as SMO) refers to the use of a number of social media outlets and communities to generate publicity to increase the awareness of a product, brand or event. Use of facebook (likes, shares), twitter (tweets, re tweet) and other social networking sites are useful in creating social signals that are mentioned in the recent Google algorithmic update. Clones of famous social sites with do follow links can

be used produce an online presence when auto post links are enabled.

5.3.5. Press releases

News sites are fonder of free content. In order to get your release picked up by the maximum number of news sites, make sure you use at least 3 images, make sure your content is over 1000 words long, do not post more than 2 outbound links, and break up your content into 150 word blocks. DO NOT use exact match anchors on press releases.

5.3.6.GOV and .EDU links

Google considers these sites to be of high importance, which is why they give off so much weight and have extremely high Page Rank. In a nutshell, getting several ".gov" and ".edu" back links will contribute to your Page Rank tremendously, more then just a regular link, or PR6 link for that matter.

5.3.7.Blog Commenting

Blog commenting is the best way of getting natural back links to the site by posting relevant content or valuable

suggestions in the comments as these comments tend to get approved by the authors of sites with high PR. Ten manual comments are fast better than 100 automated comments.

5.3.8. Video, Images and PPT

A PDF and Power Point presentation of the article is made and a link is made so that every page of the PDF or ppt points to the money site and to a random page in the website. Upload both PowerPoint and PDF to SlideShare and Scribd.Use URL of the money site in description and add some text(DIFFERENT for each file). Make videos of the articles and few promo videos stating the purpose of the website.

5.3.9. WIKI sites

This is a method that still works with automated tools.

5.3.10. Guest posts

In exchange for quality content, you can get free links. Real and blogs are in need of quality articles to their site. When you write a quality article, there are always better offers for your content. This is an EXTREMELY safe method of link building. Although it takes time for enjoying these benefits, the results are quality links.

5.3.11. Social Bookmarks

The one of the easiest way of getting a back link is Social Bookmarking where URL, descriptions, tags and titles can be included. This is used to increase social signals, to make the content easy to share and to drive traffic to money site from targeted audience for ROI.

5.3.12. Article Submission:

This refers to writing a relevant article about your business and submits it on the article directories and includes a link or two pointing to the money site. Article should be unique keyword optimized one with around 500-700 word and sub headings, bullets etc.

5.3.13.High Page Rank back links

This refers to getting links from high authority pages that are re-

puted with huge domain age, high SEO features and PageRank.

5.3.14. Domain with age or keyword in it

There are thousands of websites expiring each day. Using a few automate software, find the domains that has expired and have natural links from other sites in your niche. Many of these sites are old and have authority, even with high PRs. Register the domain and post some relevant content in it. Wait for a few days and create 301 re directs or outbound links to the money site.

5.3.15. Get links from Scrapers and Content Thieves

Tynt.com is a service that lets you get back links from scrapers and copy & Pasters. Check out their site, you won't be disappointed.

5.3.16. Anchor texts

65% Keywords, 10% Click here5% Read more, 10% Source and 1

5.3.17. On Page Optimization

Title Optimization can be done by including, keyword in the title and by using brief and catchy title. Meta Tags Optimization can be given by describing the selling point and what information that page offers. Use keywords that are targeted in Meta tags. Important HTML Tags such as header elements like h1 tag for the topic, h2 and h3 for sub divisions can be used. Text Styles such as bold, italics quote can also be applied. Other keyword optimization & synonyms such as keyword research keyword density, related keywords and tar-

geting long tail keywords can be used. Link Optimization can be given by a good anchor Text and by using and permalinks in CMS.Image Optimization can be implemented using alt text, file name image title and image linking.

Figure 1
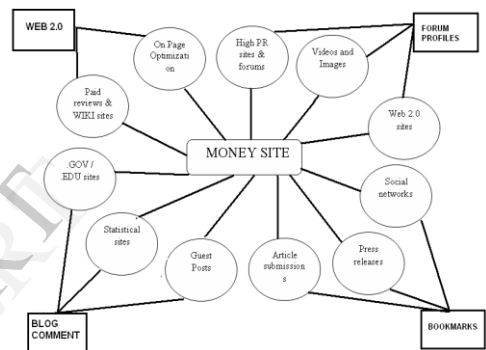
Massive link wheel Structure for SEO

Conclusion

You can access the data that is being collected by tool using XML. You can embed in your application by using XML API. Track your ranking on different web search engine can be done. One of the key factors of ranking algorithm is Page Rank. Estimate the potential traffic and the value you can get from ranking from the organic search. Data can be imported from organic ranking to see actual traffic. It gathers the list of site's main referring links. Submission of sites to a multiple web directories. Another

the key indication used by search engines to determine what a web is all about to analyze the keyword density. Find relevant blocks for your site and automates the communication. Depending upon on number of Index pages on search engine your site appears into the search results, Promotion of your site can be done. Track Activity like Track mention, shares and comments can be done on your site using facebook .Shows number of blank links to your site. This indication is useful & valuable in determining your page rank. Usually an bidding type of setting Called Pay per click can be introduced on your site because you don't pay until somebody clicks on your ad. The process of gaining search engine rankings by paid listings.

Defination
SEO: Search engine optimization (**SEO**) is the process of affecting the visibility of a website or a web page in a search engine's "natural" or un-paid ("organic") search results. In general, 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,[1] news search and industry-specific vertical search engines

Web Crawler: A **Web crawler** is an Internet bot that systematically browses the World Wide Web, typically for the purpose of Web indexing.A Web crawler may also be called a **Web spider**,[4] an **ant**, an **automatic indexer**,[2] or (in the FOAF software context) a **Web scutter**.[3] Web search engines and some other sites use Web crawling or spidering software to update their web content or indexes of others sites' web content. Web crawlers can copy all the pages they visit for later processing by a search engine that indexes the downloaded pages so that users can search them much more quickly.

Indexing: Search engine indexing collects, parses, and stores data to facilitate fast and accurate information retrieval. Index design incorporates interdisciplinary concepts from linguistics, cognitive psychology, mathematics, informatics, physics, and computer science. An alternate name for the process in the context of search engines designed to find web pages on the Internet is *web indexing*.Popular engines focus on the full-text indexing of online, natural language documents[6].Media types such as video and audio and graphics are also searchable.

Webmaster:
A **webmaster** (from web and master),[7] also called a **web architect**, **web developer**, **site author**,

or **website administrator**, is a person responsible for maintaining one or many websites. The duties of the webmaster may include ensuring that the web servers, hardware and software are operating correctly, designing the website, generating and revising web pages, A/B testing, replying to user comments, and examining traffic through the site. As a general rule, professional webmasters "must also be well-versed in Web transaction software, payment-processing software, and security software."[8] Due to the RFC 822 requirement for establishing a "postmaster" email address for the single point of contact for the email administrator of a domain, the "webmaster" address and title were unofficially adopted by analogy for the website administrator.

Acknowledgement

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