



Web Optimization Architecture User need and Increase Engagement

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Abstract—

Keywords— Data Mining, Web Mining, Web Usage Mining, Web Content Mining, Web Structure.

I. INTRODUCTION

Website optimization is the process of improving your website's performance across various areas, such as web traffic, conversion rates, and usability. Although you can have many KPIs and goals for your optimization efforts, the main objective of website optimization is to ensure your website creates a smooth digital journey.

II. WEB USAGE MINING

The main source of data here is-Web Server and Application Server. It involves log data which is collected by the main above two mentioned sources. Log files are created when a user/customer interacts with a web page. The data in this type can be mainly categorized into three types based on the source it comes from:

- Server-side
- Client-side
- Proxy side

Preprocessing The web usage log is not in a format that is accessible by mining applications. For some data to be used in a mining application, the data can be required to be reformatted and cleansed. There are some issues specifically related to the use of weblogs. There are some steps included in the processing phase include cleansing, user identification, session identification, path completion, and formatting.

Data structure – There are several unique data structures have been proposed to keep track of patterns identified during the web usage mining process. A basic data structure that is used is called a tree. A tree is a rooted tree, where each path from the root to a leaf represents a sequence. Trees can save strings for pattern matching applications. The only problem with trees is space requirements.

Pattern discovery – The most common data mining technique used on clickstream data is that of uncovering traversal patterns. A traversal pattern is a group of pages inspected by a user in a session. The other type of pattern

may be uncovered by web usage mining. Patterns are found using different combinations which are used to discover different features and for different purposes.

Pattern analysis – When patterns are discovered, they must be analyzed to determine how that information can be used. Some of the patterns can be deleted and not determined to be of interest

Website Performance Optimization

There are so many ways and techniques you can use to make your website work faster. You need to use techniques on both client-side and the server-side of your web application.

Caching & Content Delivery Networks

The website experiences the heavy load of traffic and the page takes a longer time to load. Also when the user is far away from the server load times increase more because the information has a farther distance to travel.

Minimize HTTP Requests

Website makes a large number of HTTP requests then the web pages will take more time to load. Web page's load time is spent downloading the different parts of the page, like images, style sheets, and scripts

Reduce Redirects

To move and delete pages or to eliminate the issue of broken links you might be using redirects but these redirects create more HTTP requests and that negatively impact performance

Enable Compression

The larger your files, the slower your pages will load. Reducing the file size is great techniques to achieve better page speed so always try to compress files as many as possible.



Benefits of website optimization

Increase traffic

Optimizing your website's content and technical SEO makes it easier for people to find your content organically through potential leads converting into buying customers. And by optimizing your content quality you create a prime experience that will nurture customers and leads alike.

Improve brand visibility and brand awareness

Another benefit of increased traffic is that it gives you more opportunities to showcase your brand and connect with the right audience through relevant content.

Improve brand reputation and brand experience

With consistent, people-first experiences on your website, you also improve your brand's reputation. Your website is an extension of your brand, so a positive experience on your website can help you gain loyal customers.

Page Speed Important

User will wait before losing focus is roughly from 0.3 to 3 seconds. If your website takes longer than that to display important information, the user will lose focus and possibly close the browser window.

Websites that are faster will have lower bounce rates, higher conversion rates, higher ranking in organic search, and, of course, they will have an overall better.

The bottom line is that slow websites will cost you money and will hurt your brand. On the other hand, making your web pages load faster will positively impact traffic.

A website page speed optimization strategy should be developed and adhered to as additional pages are added to your company's website. There should be standards in place that guide your designers on how to optimize images, the rules for using embedded media, and widget and plug-in use.

If you host your own site, your website developers should pay careful attention to server speed, API usage and caching. These factors are often referred to as "technical SEO" because they exist behind the scenes and are not part of the visually apparent parts of your website.

Page Speed Optimization Test

In my experience, the only page speed optimization test you should care about is Page Speed Insights test. You want your pages to all show green on this test. The good news is that Google will tell you why your pages are not performing well on this test, but it offers little in the way of explaining how to fix it.

Ultimate goal is to create the best user experience that it can for searchers. This means providing relevant and up-to-date information. However, the tech giant also knows that users are unlikely to stick around waiting for a page to load. Getting something, anything, loaded for a user to begin to look at while the rest of the page loads can be a key to this.

Conclusion

Web page speed optimization should be a top priority for any website owner. The speed of your site dramatically impacts your site's SEO (search engine optimization) and bounce rate. Bounce rates are calculated as the number of single-page sessions of zero-second duration divided by the total number of page sessions on your website. Mobile Page Speed Optimization Since many people use their phones exclusively for web browsing, mobile page speed optimization is very important. Remember, mobile pages are considered separately for SEO results. Your site's mobile pages do not automatically inherit the main site's SEO ranking. Users searching on mobile devices have their page rank calculated separately based on the site's mobile page speed rather than the main website's page speed.

This means that website owners need to pay just as much attention (if not more) to their mobile site's speed. As the use of mobile search continues to grow at an exponential rate, the consumer demand for information at the blink of an eye also increases. Searchers demand instant gratification, and to deliver that, your mobile website's pages must be optimized.



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