

Survey on: Modern User Interface Optimization Techniques

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Abstract- Article describes on optimizing man-machine fit. Huge efforts are made by lots of researchers to automate the process of web data scraping. Lots of techniques depend on the structure of web page i.e. HTML structure or DOM tree structure to scrap data from web page. In this paper we are presenting survey of HTML aware web scrapping techniques. We address topic by reviewing the strengths and weaknesses of the most important source of web metrics (web logs) and then conducting an extensive case study and explore how they use web metrics for website optimization projects and try to overcome weaknesses.

Keywords- Web Optimizing, Html Page, Web Scrapping, Web Matrix

I. INTRODUCTION

With the explosive growth of World Wide Web, vast amount of data is offered online. There is number of data analysis applications such as extract competitor's price list from web page regularly to stay ahead of competition, extract data from a web page and transfer it to another application, scrape tabular data from the web and transfer it to Excel, extract people's data from web page and put it in a database, extract opening and closing price of stock from a web page, extract mutual funds information from a website daily, extract tabular data from the web and transfer it your own application, which requires web data scraping. Designing a user interface, teams must often balance conflicting demands for speed, simplicity, and versatility, but their ability to do so is limited. Interface optimization is an analysis technique that helps designers discover trade-offs early in a design process. Designers compare functional specifications by performing usage scenarios on imagined UIs and recording the steps. This data is processed with optimization techniques to produce visualizations of the design space. This paper briefly describes interface optimization, how it fits into a UI design process, and preliminary experiences using the technique. Optimization methods in user interface (UI) design are a long-standing topic in human– computer interaction (HCI) research. Currently, user-centered design is largely focused on human creativity, sense making, empathy, and creation of meaning, but

optimization methods have been explored as supplemental ways to help speed up the design cycle and improve design quality .

II. LITERATURE REVIEW

Website optimization is the process of using controlled experimentation to improve a website's ability to drive business goals. To improve the performance of their website, website owners implement A/B testing to experiment with variations on pages of their website to determine which changes will ultimately result in more conversions (eg. demo requests, increases in organic search results, more purchases, reduced customer service time, etc.).

A. Three Paradigm:

Early Focus on Users and Tasks: First, designers must understand who the users will be. This understanding is arrived at in part by directly studying their cognitive, behavioral, anthropometric and attitudinal characteristics, and in part by studying the nature of the work expected to be accomplished.

Empirical Measurement: Second early in the development process intended users should actually use simulations and prototypes to carry out real work, and their performance and reactions should be observed, recorded, and analyzed.

Iterative Design: Third, when problems are found in user testing, as they will be, they must be fixed. This means design must be iterative: There must be a cycle of design, test , measure and redesign repeated as often as necessary.

B. How to Optimize Your Website Step-By-Step:

Run the experiment. Make sure when you're running the experiment that you gather enough data to make your conclusions statistically significant. You don't want to base your business decisions on inconclusive data sets.

Measure the results, draw conclusions and then iterate. The results of an experiment will show whether or not the changes to the website element produced an improvement. Website optimization can offer many measurable business benefits if done correctly. First, the process of website optimization determines the best version of web page elements that help visitors to accomplish a certain goal. In turn, improved efficiency leads to greater ROI on customer acquisition and traffic-generating campaigns such as web searches, Google Ad Words, social media, and email marketing.

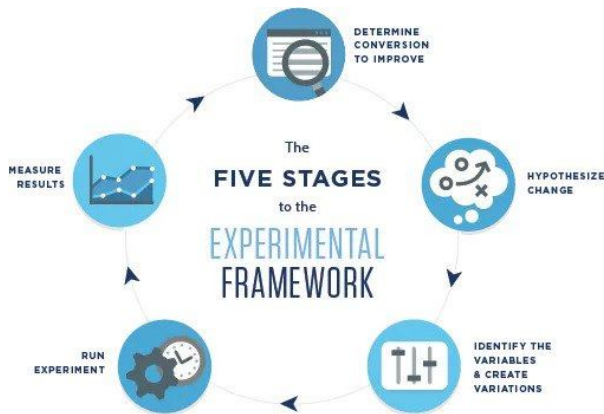
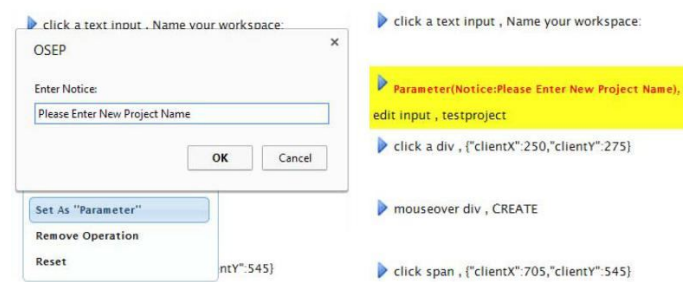
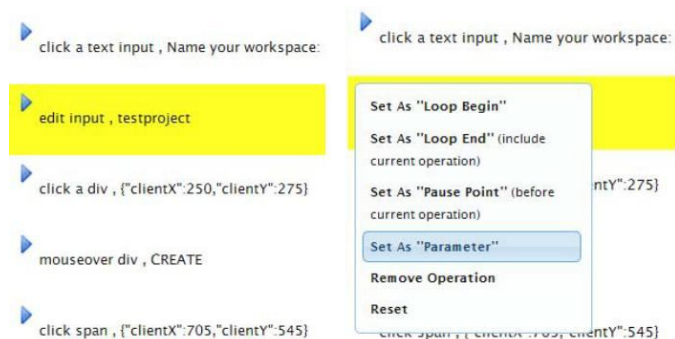


FIG. 1

C. Optimize User Operations:

To increase the replay efficiency, some recorded operations which can be recognized as redundant operations can be removed provided that the removals would not cause errors on the replay. We can apply various optimization strategies on these operations. Recorded operation sequence is defined as S[1], S[2], ..., S[I], the general form of optimization function OPT is defined as OPT: S [i], S[i-1], ...,S[i-k+1] ? S’[i]



D. Optimization of Html:

HTML language is the most important language that makes up a Web document. HTML files in a Web page are descriptive text that consists of many HTML commands. The main methods of HTML optimization include the following: (1) The use of "DIV + CSS" mode layout can make the code streamlined, the structure is clear, make the page smaller. (2) CSS and JavaScript files outside the chain. The outer chain is referenced by the CSS or JavaScript code in the relevant page. (3) Delete the HTML element redundant initial default properties; many HTML elements will have some initial default properties, so you can delete these redundant attributes.

E. Optimization of CSS:

CSS style sheet determines the way the page is displayed, defining the location, size, and effect of the elements in the page, and plays an important role in the rendering of the web.

CSS optimization of the main methods are: (1) the CSS file on the head tag, so that the first step in the loading page to download and parse the CSS file, along with other resource files to achieve progressive rendering and display to enhance the page gradually rendering speed. Many elements of the page, such as pictures, scripts, etc. are required to download the web page, and CSS style sheet for the components of the page provides its performance style, location and format information. (2) Write efficient CSS selectors CSS selector in accordance with the efficiency from low to high: pseudo-class and pseudo-elements, attribute selector, wildcard selector, descendants' selector, sub-selector, adjacent brother selector, type selector, class selector, ID selector.

III. METHODOLOGY

Optimization of web interface is started by considering the optimization steps. Optimization steps are split for the easy design of user operation and for the performance

by using website capture. Optimization of Html code extracted for reducing unused UI's and layout and style is optimized using optimization of CSS. Client cache optimization optimizes the user experience by displaying the score and recommendation of websites.

The first time you access a Web page, you will have a lot of HTTP requests, and you can use the Expires header to cache the components after the initial access and control the cache expiration date. The Web server uses the Expires header to tell the Web client that as long as the component does not expire. Etag is a physical tag that is used to confirm that the cached component is valid. The components downloaded by the browser are stored in the browser's cache. In subsequent page views, if the cached component is valid, the browser will read it from the local disk to avoid generating an HTTP request.

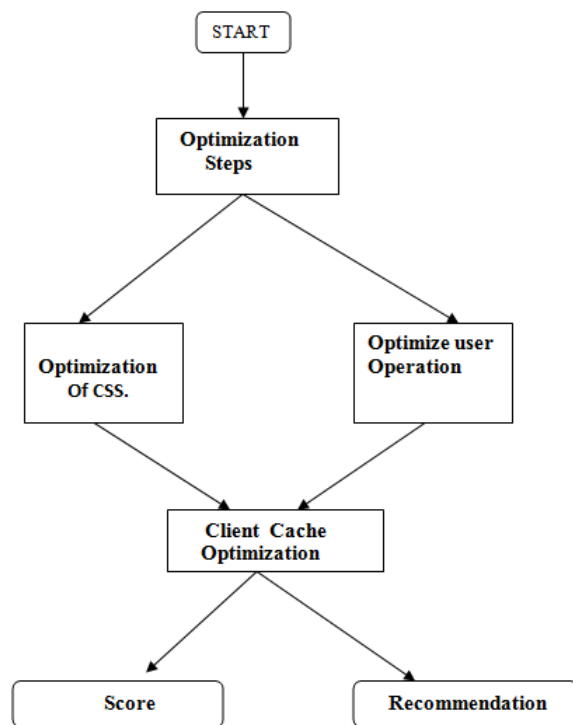


FIG .2

Flowchart illustrating the different optimization techniques in sequential manner.

IV. ANALYSIS

Web page for the first time the load is in the browser without the cache from the server through the network to download the process of the client. There are many factors that affect the speed of the page, the page size is an important factor affecting the loading speed of the page. When the requested page is small, the amount of data is small and the

time it takes to return is reduced. Compression is the simplest technology to reduce page size. Gzip is an abbreviation for GNUzip, and the Gzip encoding on the HTTP protocol is a technique used to improve the performance of Web applications. Gzip compression technology is currently the most widely used a compression technology, it is a GUN free software file compression program. Gzip is now the most widely used a compression technology, patent rights and other aspects without any restrictions, and has become the RFC standard.

V. SUMMARY

The web front end is a relatively large part of the optimized space. This paper introduces the principle of frontend optimization, and introduces five front-end optimization methods from two aspects: server response time and client response time. The goals of a website will vary depending upon the type of business, the business' target customers, and the desired action of that audience: a purchase, filling out a form, or reading an article. The desired action of a website visitor can also be conversions, or the number of audience members who complete a certain action. An online publication practices website optimization with the conversion goal of increasing the number of articles visitors read. An online store optimizes its website to encourage completion of checkouts and repeat purchases .An online software company optimizes its website to improve the rate at which visitors sign up for (or convert to) a free trial of the product. An insurance company optimizes its website to capture more potential leads for insurance coverage sales .A fundraising campaign optimizes their donation form to encourage more donations.

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