Chapter 8

Quality Assurance of Website Structure

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ABSTRACT

Today, the web is not only an information resource, but also it is becoming an automated tool in various applications. Due to the increasing popularity of WWW, one can be very cautious in designing the website. Poor and careless web design leads to hardship to public utility and does not serve the purpose. If the website is not designed properly, the user may face many difficulties in using the website. In last few years a set of website metrics were defined and specified based on the data collection point of view. Among hundred and fifty automated web metrics catalogued up to now, metrics for link and page faults, metrics for navigation, metrics for information, metrics for media, metrics for size and performance, and metrics for accessibility are important categories for evaluation of quality of web site. The website structure and navigation depicts the structure of the website. The navigation of website is dependent on structure of the web site. The present chapter is an attempt to develop a comprehensive quality assurance mechanism towards quality web design process. In this chapter, various measures and metrics for the quality of website structure are investigated as a part of quality assurance process.

INTRODUCTION

The web (Enrique Herrera-Viedama, 2006) is playing a central role in diverse application domains such as business, education, industry and entertainment. As a consequence, there are increasing concerns about the ways in which web applications are developed and the degree of quality delivered. Thus, there are compelling reasons for a systematic and disciplined use of engineering methods and tools for developing and evaluating web sites and applications. A website is a collection of web pages containing text, images, audio and video etc., Thus web is a vast collection of completely uncontrolled documents. Despite of many recommendations,
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ideas and guidelines, designing a quality website is still a burning problem. The quality assurance techniques for web applications generally focus on the prevention of web failure or the reduction of chances for such failures. Due to the unceasing growth of web sites and applications, developers and evaluators have interesting challenges not only from the development but also from the quality assurance point of view.

SURVEY OF LITERATURE

Website Navigation (Darken & Siebert, 1993) is the process of determining a path to be traveled through a chosen environment. (Nielsen, 1996) claimed that the navigation design of a website answers three fundamental questions when browsing the site. They are:

1. Where am I?
2. Where have I been? and
3. Where can I go?

By 1997, much of the existing navigation research literature deals with virtual reality (Brajnik, 2003). In fact, the navigation is such an important feature that (Krug, 2006) a “navigation is not just a part of the website; It is the website”. Web navigation is a challenge because of the need to manage billions of information objects (Nielsen, 1998a; 1998b; 1999) which makes the measuring of navigability extremely difficult. Three major phases were proposed to tackle the navigation and search problems. In the first phase, information about hyperlinks has been used for assisting user navigation and search. The link structures of the Web and Web sites are visualized. Hyperlinks are used to cluster Web pages. Hyperlinks are used to get authoritative rankings of Web pages. In the second phase, information about Web page contents has been used for assisting user navigation and search. Web page contents, anchor texts, and extended anchor texts have been used to get relevance-based rankings of Web pages. In third phase, information about Website content priority has been used for assisting user navigation. Web site usage data, which contain records of how users have visited a Web site, have been used to identify collective user behavior in using the Web site. The breadth and depth web design issues were widely studied. Results from several studies have suggested that a web page with many links, the mean to reduce the depth is the optimal condition for user performance. (Zaphris & Mtei) found that in a site of 64 links, the design with 8 links per page and two levels resulted in fastest response time and lowest navigation efforts (Zhang, Huo Zhang, Zhu, & Greenwood, 2001). For web design, a widely quoted heuristic rule of navigation design is the “three click rule”, which states that the user should be able to get from home page to any other page on the site within three clicks of the mouse.

OPTIMIZATION OF WEBSITE STRUCTURE FOR QUALITY ASSURANCE

The procedure of the quality assessment of website structure involves four modules:

1. Creating a sitemap
2. Computing path length metric
3. Evaluating structural complexity of website and
4. Finding broken link error index.

Creating a Sitemap

Every website must have sitemap to know the organization of web pages in the website structure. The sitemap shows all web pages in a hierarchical tree with home page as root of the tree. A web tool PowerMapper is used to construct a sitemap for the website. It selects