Web Content Adaptation for Mobile Devices: A Greedy Approach

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ABSTRACT

Mobile internet browsing usually involves a lot of horizontal and vertical scrolling, which makes web browsing time-consuming. In addition to this, users may be interested in a section of a web page, which may not fit into the mobile screen. This requires more scrolling in both directions. In this paper, we propose to address this problem by re-arranging the geometric sequence of the blocks from a large web page while maintaining their semantics. Our proposed system, Web-adaptor, reduces unnecessary information by allowing its users to see the most relevant blocks of the page and provides the target contents. The Web-adaptor assigns profit to each object of the web page according to the user preferences. It also assigns a weight to each object of a block by analyzing the object's elements. It uses a greedy algorithm to select the profitable blocks, and delivers them to handheld devices. The proposed solution improves web content accessibility and delivers the target contents to the users.

KEYWORDS

Content adaptation, mobile browsing, small display, adaptive interface for small screens, mobile web.

1 INTRODUCTION

Over the last few years, people started using network ready mobile devices like handheld computers, PDAs and smart phones to access the internet. The term mobile device refers to a device specially designed for synchronous and asynchronous communication while the user is on the move [1]. Among the many mobile devices, the mobile phone and PDA are the most popular and commonly used by users to access the internet [1]. These kinds of devices provide good mobility but very limited computational capabilities and display size [2]. Mobile users don't feel comfortable to browse the internet via mobile devices mainly, because of the small screen, limited memory, and processing speed [2][3]. Since most of the existing web contents are originally designed for display on desktop computers, so content delivery without layout adjustment and content adaptation make the contents unsuitable for mobile devices. A user needs to scroll the screen horizontally and vertically to find the desired content. Moreover, searching and browsing could frustrate, because most of the web site is designed for the standard desktop display. This means that most of the web contents are unsuitable for mobile devices [4].

Content adaptation refers to techniques that dynamically adjust the contents according to the properties of the handheld devices for better presentation experience. The conventional way to provide web contents to support various types of handheld devices is to create the same contents but with different formats for different devices. This method is