Chapter 7
Content-Determined Web Page Segmentation and Navigation for Mobile Web Searching

ABSTRACT

Nowadays the usage of mobile phones is widely spread in our lifestyle; we use cell phones as a camera, a radio, a music player, and even as a web browser. Since most web pages are created for desktop computers, navigating through web pages is highly fatigued. Hence, there is a great interest in computer science to adopt such pages with rich content into small screens of our mobile devices. On the other hand, every web page has got many different parts that do not have the equal importance to the end user. Consequently, the authors propose a mechanism to identify the most useful part of a web page to a user regarding his or her search query while the information loss is avoided. The challenge here comes from the fact that long web contents cannot be easily displayed in both vertical and horizontal ways.

INTRODUCTION

Web searching on a mobile device, especially based on a cell phone is very common and convenient. Since most Web pages are with rich content and mainly are specifically developed for desktop computers, it is hard to navigate them with (relatively) small screen of handled devices. Hence, there is a great interest in computer science to adopt such pages with rich content into small

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screens of mobile devices. However, a Web page has different parts that do not have equal importance to the end user. This fact made us to consider a novel approach to identify the most useful portion of a Web page to the end user regarding its search query. Typically, mobile phones are common in the following characteristics:

- **Small Screen**: limited screen area compared to a conventional PC.
- **Limited Keyboard**: Limited area for interaction with the device. Therefore it is necessary to put the relevant part at first.
- **Distracted User:** A desktop user is mainly in an (relatively) isolated environment with focused attention to its working. Whereas, a smartphone user may be in an open area with distractive surrounding which makes him or her to devote only a portion of his or her attention to the device. Consequently, less scrolling is desired.

MOTIVATION

At (Kamvar et al., 2009) a log-based research for 3 different types of devices has been conducted based on, a common Smartphone[1], desktop computers and conventional phones; to see the behavior of users in regards to different devices in Web searching. The authors of the paper claimed that in their first order analysis of web search across computers, Smartphone, and conventional mobile phones, they have consistently found that search patterns on a Smartphone relatively mimics search patterns on computers. On the other hand, mobile search behavior is distinctly different. The authors claimed this might be due to advanced entry of a Smartphone compared to that on a mobile phone. Thus they predicted that as mobile devices become more advanced, users will treat mobile search as an extension of computer-based search. Hence the authors of this article concluded this might be caused due to the fact that a mobile phone has a small screen and the text-entry device is difficult to use- so users preferred to use mobile phones just once for performing a search. Theses distinct users' behaviors between Smartphone users and conventional cell phone users come from the smaller screen and button-based keyboards vs. touch screen of Smartphone.

While this study was conducted in the past and Smartphone users are the majority, the content of Web sites/portals has significantly changed and