

Pocket News : News Contents Adaptation For Mobile User

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ABSTRACT

We have presented a system called *Pocket News* that transforms web contents in the internet automatically to the contents to be adapted for a mobile terminal, especially PDA. It is adequate for the web sites whose contents have been updated frequently, like as news contents. We have also proposed a *page splitting* technique to navigate mobile pages with button controls instead of scroll up/down controls. The proposed system also generates mHTML pages for mobile phone which support Mobile Explorer.

Categories and Subject Descriptors

[Web site design and evaluation]: Structuring hypermedia documents for reading and retrieval

General Terms : Design, Experimentation, Human Factors

Keywords : mobile terminal(PDA), contents adaptation, parsing components, page splitting, , mHTML

1. INTRODUCTION

Mobile terminal such as mobile phone or PDA has limitations in their hardware performance compared to PC. Besides, it has poor user interfaces. That means it can not be possible to view full contents of web pages in the internet with such a terminal as we can do with PC.

Thus, we have presented a system, called *Pocket News* that transforms web contents in the internet automatically and directly to the *contents* dedicated to a mobile terminal, especially PDA. The primary goal of this research is to reuse web contents in a wireless internet with PDA without any additional effort to rebuild them at scratch for contents adaptation. The secondary goal is to present a more convenient user interface to read mobile pages easily with PDA.

Several studies have been made on transforming web contents in the internet to the contents adapted for a mobile phone.

Most of the works [1, 2] have been used XML (eXtensible Markup Language) as an intermediate language to generate

mobile web pages.

The most difficult thing for contents adaptation is that each web site adheres to its own presentation style. For example, to display its message to web browser, one uses <P> tag, whereas the other uses <TR> tag. Thus, it is less effective to transform such a *meaningless* HTML tag into its corresponding XML tag by just defining their relation manually.

Our proposed system will try to transform web pages to their corresponding mobile pages directly without going through any intermediate language like XML. With our approach, it is best fit for the web sites whose contents have been updated frequently, like news contents..

2. AN OVERALL STRUCTURE

Fig 1 shows the process flow of the Pocket News system. If a mobile user selects a title in the index page on his(her) mobile terminal, with the aids of the two major components, *Loader Module* and *Parsing Components*, he(she) can receive the mobile pages that is best fit to his(her) terminal and read them with it.

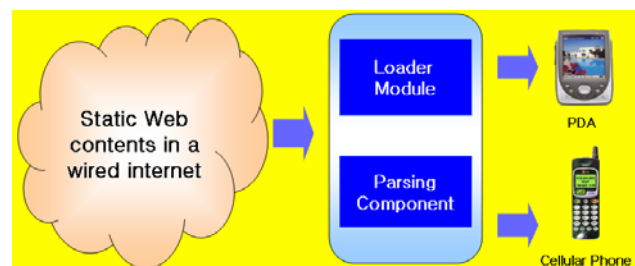


Figure 1. The process flow of the Pocket News

2.1 The Loader Module

If we specify the domain name of web site (*i.e.*, index page) to be transformed, it extracts all of the pages which have been hyperlinked to the index page and saves them in the file system of the server. Because the contents of the web site chosen as contents adaptation will be updated frequently, it visits that site periodically to check whether its contents are changed or not. If they did, it will overwrite the page just updated, whereas the other pages will remain unchanged.

2.2 The Parsing Components

It takes each of the pages stored in the directory created by the Load Module as an input and then process it to discard unnecessary information, i.e., banner menus, advertisements, style-sheets, etc. Due to the narrow screen size of PDA, it could be better to treat text-based information and its image separately. Thus, if a page has an image, at least two pages will be generated: one is text-only page and the other is a solely image page. Finally, it splits the generated text page into two or more sub-pages depending on the screen size of PDA.

3. EXPERIMENTAL RESULTS

3.1 The Experimental Environments

The Pocket News system in *server side* is running on Windows 2000 Server, where the system in *client side* is running on Windows CE 3.0 (or higher). We have chosen Compaq iPAQ 3660/3850 (206MHz Mobile CPU, 64M RAM) as a mobile terminal in the client side. A test-bed wireless internet system has been built and tested with utilization of Access Point (11 Mbps) and wireless LAN cards based on the 802.11b standard.

3.2 The Snapshots of running the Pocket News

The left hand side of Fig.2 shows a client-side view without contents adaptation. It displays only a smaller part of the page (1/24 of full size). Besides, it will take a long page loading time. However, the right hand side of Fig.2 shows a client-side view with contents adaptation (the *index* page of the Pocket News). It took a shorter page loading time (600-700ms).

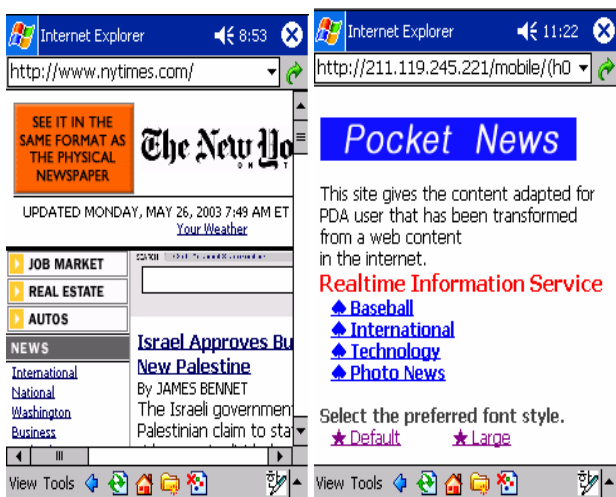


Figure 2. A client-side view without contents adaptation (left hand side) and with contents adaptation (right-hand side)

If we choose the sub-title, *Technology*, of the page in Fig.2, we can see the index page of Technology related news as shown in Fig. 3. When we click the 1st subject of the page, the first splitting page will be shown as in Fig.3.

Notice that the page of Fig.3 has two navigation buttons in the below, instead of scroll bar on the rightmost trail. If we click the Next button, we'll see the 2nd page of that subject.



Figure 3. The index page (left-hand side) and the first sub-page of the content (right-hand side)

With adaptation of page splitting technique, manipulation of navigation button controls to read mobile pages with PDA is faster than with scroll bar controls by 9.58 seconds (in average) while its size is 2-3 Kbytes.

It can be possible for the Pocket News to transform web page into one which is suitable for mobile phone. It can create mHTML pages that are running on mobile Explorer.

4. CONCLUSION

It can be possible for the Pocket News system to reuse web contents in a wireless internet without any additional effort to rebuild them at scratch for contents adaptation. The proposed system will transform web pages to their corresponding mobile pages directly without going through any intermediate language like XML. Thus, it is quite adequate for the web sites to be updated frequently. Our experimental results show that by manipulation of navigation buttons with the aid of page splitting technique becomes more efficient to read full-contents using PDA as the size of text contents becomes larger.

5. ACKNOWLEDGMENTS

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6. REFERENCES

- [1] M. Perkowitz et al, Towards adaptive web sites: Conceptual framework and case study. AI Journal, 118(1,2), 2000.
- [2] T.W.Bickmore et al, Device-independent access to the world wide web. In Proc. of 6th Sixth WWW Conference, 1997.

**Authors with color figures
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