

Adaptive Content Delivery on Mobile Internet across Multiple Form Factors

Hongjiang Zhang and Wei-Ying Ma

Microsoft Research Asia

hjzhang@microsoft.com, wyma@microsoft.com

Abstract

In the PC+ era, a variety of new mobile devices, such as web-enabled watch, Smartphone, Pocket PC, Tablet PC, etc, are making a population boom. As most of current documents and multimedia contents are designed for applications on desktop PC, we are facing a big challenge -- the problem of multiple form factors resulted from the diverse set of emerging new devices. For example, browsing conventional web pages on Pocket PC is a pain. Browsing a large picture on Smartphone (e.g. picture messaging application) is no different to a thumbnail view, even though the users are now able to capture high-resolution pictures on the latest models of camera-equipped cell phones. Furthermore, enterprise software applications have been aiming to take the advantage of ubiquitous network connection by mobile Internet to increase the productivity of information workers.

As the current document-related applications are highly desktop-PC focused, to unleash the power of mobile Internet in the PC+ era, we need to innovate more aggressively and develop a new generation of document and content technologies to cope with the problem of multiple form factors. In this talk, we will briefly review the past research and development on adapting multimedia content for heterogeneous device capability, user context and network environment, including the MPEG-7 standard. Then, we will focus on the challenge of limited display and input capability in mobile devices, we believe that in order to successfully tackle this challenge, we need to (a) develop new content representation which is scalable and adaptable, (b) develop content analysis techniques to structure content for the new representation, (c) develop corresponding rendering algorithms and innovative user interfaces to maximize the information throughput of the content on small devices, and (d) make content adaptation service part of mobile Internet architecture.

We will also introduce some specific research works that we have been conducting towards this direction in Microsoft Research Asia. These works include Scalable Web Document which is a new web content representation for various display sizes, Smart Picture which uses image attention model to facilitate the browsing of large pictures on mobile devices, and Media Companion which uses proxy augmentation on the edge of mobile Internet to construct a content service overlay for dynamic adaptation and value-added services.