

Continuous Web: A New Image-Based Hypermedia and Scape-Oriented Browsing

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ABSTRACT

Conventionally, Web pages have been recognized as documents described by HTML. Image data, such as photographs, logos, maps, illustrations, and decorated text, have been treated as sub-components of Web documents. However, we can alternatively recognize all Web pages as images on the screen. When a Web page is treated as an *image*, its HTML data is considered to be metadata which describes the *image* content. Taking such a viewpoint, we propose a new image-based hypermedia which we call *continuous web*. In our model, there is no distinction between Web images and other images such as photographs.

Regarding everything on the Web as images leads us to consider a new style of browsing and navigating. We use the term *scape-oriented browsing*. We define a *scape* as a collection of continuously accumulated images. For example, whenever we walk in the real world, we can perceive and remember various forms of information through a *scape* process. Here, we describe new methods for *scape-oriented browsing*, such as see-through anchors, parallel navigation, and peripheral scape presentation. We have designed and implemented a prototype system based on our model. Our system offers continuous browsing and navigation to users. We explain our concepts and discuss the effectiveness and potential of this approach.

Categories and Subject Descriptors

H.4.3 [Information Systems Applications]: Communications Applications - *Information browsers*

H.5.4 [Information Interfaces and Presentation]: Hypertext/Hypermedia-*Navigation*

General Terms

Management, Design, Theory

Keywords

Images, Scape, Hyperimage

1. CONCEPT

1.1 Scape-Oriented Browsing

The conventional Web is based on documents, but regarding everything on the Web as *images* lets us consider a new style of browsing and navigating. We call this concept *scape-oriented browsing and navigation*. A collection of *scapes* provides us with rich information continually. The relevant features of walking in

an actual cityscape are that:

- Users can see their immediate destinations through the *scape*.
- Users can examine areas at the periphery of the focused *scape*.
- While walking, user can see continuous scene transitions.

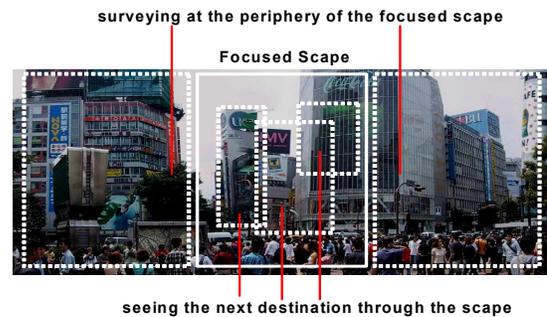


Figure 1 Features of real-world browsing and navigation

Figure 1 shows these features of seamless browsing and navigation in the real world. It is natural for us to continuously explore the real world in such a manner. This natural mode of recognition suggests various ways we can make Web browsing more intuitive:

- **See-through Anchors:** The notion of anchors can be extended into the notion of see-through anchors. Intuitively, a see-through anchor means that users can see the link destination through the anchor. By zooming in on a see-through anchor, users can view the destination *hyperimage* more clearly.
- **Peripheral Scape Browsing:** Whenever users walk in a real world space, they can see their immediate destinations as well as their peripheral area. To recreate this characteristic, we have developed a Web browser that allows a user to simultaneously browse both the destination page and the peripheral *scape*.
- **Parallel Link-Navigation:** A Web image usually contains more than one anchor. By zooming-in on a portion of a Web-image that contains more than one anchor, users can view more than one link destination at the same time. This is called *parallel link-navigation*, which is not supported by the conventional Web model or conventional Web browsers.

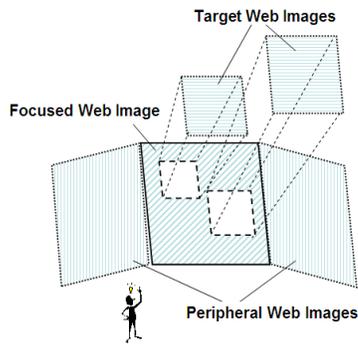


Figure 2 Navigation model link to walking in a cityscape.

Figure.2 describes our conceptual image for new style Web-browsing.

2. IMPLEMENTATION

We have designed and implemented a browsing environment to test our models. Our system consisted of a server, the *WebPhotoServer*, and a new web browser for clients, the *WebWalker*. Figure 3 shows the system architecture.

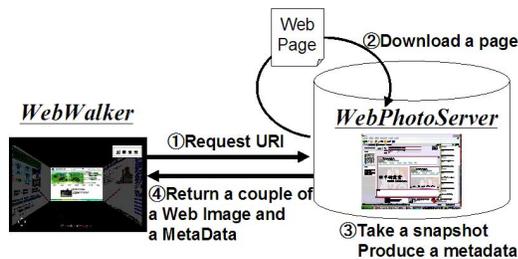


Figure 3 System architecture

2.1 WebPhotoServer

When the *WebPhotoServer* receives a request with a URI, it returns a pair consisting of a *Web image* and metadata containing the image's original HTML text data and anchor position information. The process is performed as follows:

- (1) The server receives a request with a URI.
- (2) The server gets an HTML source from the Web and displays it as a Web page (by using one of the conventional Web browsers which can be selected).
- (3) The server takes a snapshot of the Web page, and produces a *Web image* and the related metadata.
- (4) The server returns a pair consisting of a *Web image* and its related metadata.

The metadata is described in an XML format. Through access to a document object model (DOM), the geometric coordinates of HTML tag elements on the screen are easily obtained.

2.2 WebWalker

WebWalker is a web browser that incorporates the new methods. Its interface consists of three main parts: a zooming slider, scroll buttons, and a main window.

- The **zooming slider** enables users to zoom in and out.
- **Scroll buttons** enable users to change their observational scope vertically and horizontally.
- The **main window** displays several *images*. The user can click an *anchor image* to get the next *image*.

Screen images of *WebWalker* are shown in Figure 4.

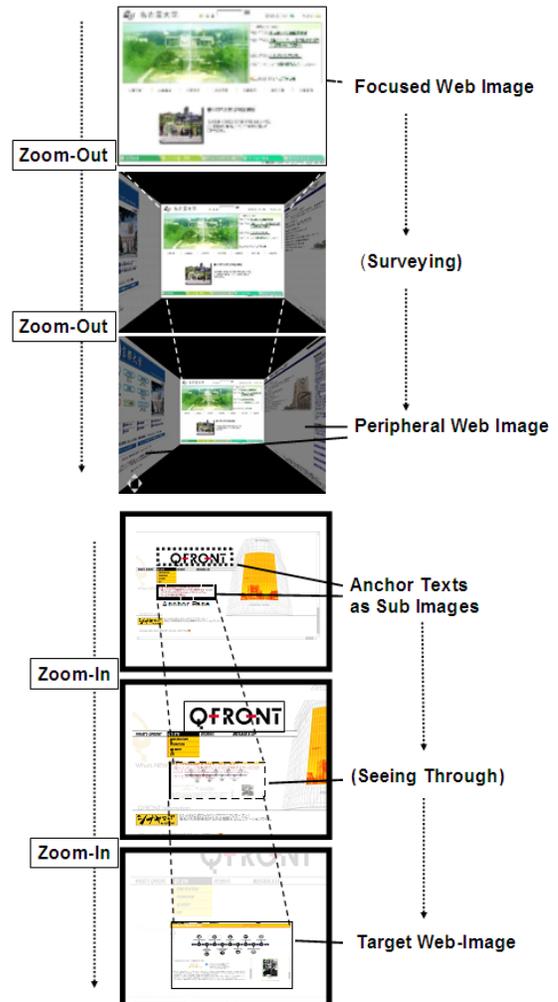


Figure 4 The *WebWalker* interface

We made a demonstration movie of our browsing/navigation system which can be viewed at

<http://www.dl.kuis.kyoto-u.ac.jp/~hirotanaka/webwalker.avi>