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NTT Develops "HotWindow" system for providing the latest information using information visualization technologies

Providing a "Trend Information Window" that picks up current information from the network world

Nippon Telegraph and Telephone Corp. (NTT; Head Office: Chiyoda-ku, Tokyo; President: Norio Wada) has developed "HotWindow" - a system for providing the latest information based on information visualization technologies and ultra high-speed Webpage gathering and categorization technologies (*1) developed by NTT Cyber Solutions Laboratories (NTT-SL).

The newly developed HotWindow provides a GUI-based (*2) overlay display (*3) of vocabulary in which the user has expressed interest and vocabulary extracted and categorized from the latest Webpages that are created one after another in the network world. At the same time, it functions as a browser that seamlessly leads the user to related network contents. In this way, the system is able to express "topicality" in which the latest information from the network world is overlaid with the user's interests. Using this "topicality," HotWindow achieves the concept of a "new information window" that arouses the user's curiosity ([see attachment](#)).

Amid the increasing number of news sites and other sites that provide information in a variety of specialized fields, this new system offers the potential for a wide range of applications for the general user, such as keeping track of the latest topics on message boards or quickly gaining a grasp of user needs and trends in auction items in the context of net auctions, for which information is being constantly updated. Companies, meanwhile, can use the system as a marketing tool because it enables timely visualization of biases and shifts in needs for new products and services. The system could also be applied in a broad range of other fields; for example, Website managers and advertising providers can develop effective advertising by using the system as an analysis tool for gaining a better understanding of the keywords that will offer the highest level of exposure in Internet searches.

NTT will provide the HotWindow service for a period of about six months from October 1 through NTT-SL's test service site "Cyber-Trial" (<http://www.cyber-trial.com/>) (*4). In addition to gathering comments and suggestions from trial users and verifying the usefulness and reliability of the technologies in an actual operation environment, the company will reflect results of the trial in research and development that will form the foundation of new services.

1 Background to development

The number of Internet users is steadily increasing, with some 55 million users in

Japan alone, and more than 11 million broadband users (as of June 2003). The people who were once simply the receivers of information in an era when TV, radio, and other mass media were the mainstream have become the transmitters of information in the network world, and as a result the volume of new information being transmitted is increasing dramatically. Under these circumstances, there have been cases in which the information does not reach the people that needed it in a timely fashion.

HotWindow acts as a "window" to provide the era's most advanced information by making it possible for users to access the latest information at any time simply by watching the HotWindow GUI, and by facilitating timely meetings between the users and the parties transmitting the information.

2 Key related technologies

HotWindow efficiently picks up current information from networks using the following two technologies.

(1) Characteristic vocabulary extraction technology that reflects freshness to acquire the latest information

NTT has developed a characteristic vocabulary extraction technology that reflects freshness to acquire the latest information, thus enabling the user to efficiently allocate unique characteristics to categories and automatically extract the latest vocabulary. This is accomplished by using ultra high-speed Webpage gathering and categorization technologies to calculate the appearance frequency and appearance movement over time for vocabulary across multiple genre categories based on the latest Webpage information, which has been rapidly gathered and categorized. In this way, it is possible to gather and categorize vocabulary that expresses the newest information created in the network world in extremely short cycles (15 minutes to one hour).

(2) Extraction technology to extract topic vocabulary from words input during user searches

NTT has developed a topic vocabulary extraction technology that automatically detects vocabulary representing current topics from among the terms input during user searches by combining the two technologies that make up this extraction technology: a high-speed ranging generator technology that quickly tabulates the words input during searches over the past few hours, and a rapidly increasing vocabulary detection technology that analyzes changes in ranking over time and extracts vocabulary that expresses rapidly increasing user needs. In this way, it is possible to achieve a close-up image of the type of information users want "right now."

The following two technologies are then used as GUI technologies to visualize the user needs and latest information gathered using the methods described above.

(3) "Trend Information Window" interface technology to support users in noticing trends and activities in the world around them

Using this technology, small round windows (category windows) representing separate categories are placed on a PC screen, enabling the user to constantly monitor the types of vocabulary that are created in each category. The words input into search engines by the user are also overlaid in the category windows, and these words are displayed with characters of varying sizes according to the user's degree of interest. The lifecycle of

information in the network world can vary dramatically, with information changing every few hours, every few days, or in some cases even longer, so it can be difficult to understand changes in information simply through displays of the newest information. We thus developed a "Trend Information Window" interface technology that enables users to "play back" the status of the window from a few hours in the past up to the present at any time using a continuous regeneration interface that displays the changes in the vocabulary which represents the latest information in an easy-to-understand format.

In this way, the system displays new information and user needs in a timely, easy-to-understand manner, thus effectively supporting the user in noticing key information.

(4) "Bubble Up" interface technology to achieve focus + context ([*5](#))

Interface technologies that can minimize superfluous operations to gather information quickly and easily are essential to the process of guiding users from simply "noticing" new information to effectively gathering that information. If normal Webpage GUIs are used for this purpose, the pages change each time detailed information for the genre category is displayed. This not only makes it difficult to get an overall view of the genre category, but also requires a large number of user operations; for example, the user often has to return to previous pages or close unwanted windows that have opened. To resolve these issues, NTT has developed a "Bubble Up" interface technology that eliminates page switching when detailed information is displayed, and enables the user to view detailed information as it is stored - in a list format for all genres - without losing the opportunity to notice information of interest.

The system also leads the user to related Web contents - all the user needs to do is click on one of the user search words or new information words that are displayed in the category information window.

In this way, users are instantly guided to related contents, where they can come in contact with the latest information and never miss an opportunity to say, "I wonder what this is?"

3 How to use "Cyber Trial"

Anybody can use "Cyber Trial" by accessing the top page and registering as a user. For details on procedures and the system environment required to use HotWindow, please refer to the HotWindow manual on the trial site at:

[<http://www.cyber-trial.com/hotwindow/index.html>]

4 Future developments

NTT will continue to conduct research and development with the goal of providing a fully functioning version of HotWindow to all users. We will gather an even broader range of constantly expanding network information, promote research and development that will form the foundations of more convenient and enjoyable services, and collaborate with the many companies in the NTT Group to develop new services that incorporate the technologies offered by these companies.

Glossary

(*1) Ultra high-speed Webpage gathering and categorization technologies
Technologies for quickly gathering Webpages from large-capacity Web servers, and for generating indexes quickly and easily. (Ref. "New-Information Search Engine":
[<http://www.ntt.co.jp/news/news02e/0212/021203.html>]

(*2) GUI (Graphical User (Interface))
An interface for graphically displaying output from a program on a computer screen.

(*3) Overlay display
A GUI display that shows two or more types of information in a visual overlay pattern.

(*4) Cyber Trial
A test service site provided by NTT-SL from May 2003.

(*5) Focus + context
On a regular GUI, outline information is lost when switching the display from outline information to detailed information, either by changing pages or zooming in. "Focus + Context" refers to an interface design approach that enables detailed displays while maintaining an outline display to some degree.

- ([Attachment](#))[How HotWindow works](#)

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