Goromi-TV Browsing for thousands of videos at will

Goro Otsubo
DENSO IT Laboratory, Inc.
otsubo@d-itlab.co.jp

Abstract
In recent years, the amount of video data that can be accessed by a user has increased dramatically. As a result, the choices offered to the user are overwhelming. Most video sharing sites and DVD recorders with a hard disk offer a search function as a way to view such data. However, when a user sits in front of the TV, he usually does not have clear demand in his mind, and cannot think of an initial keyword to start navigating using the search function. In this paper, we present a novel interface to video data, called Goromi-TV which enables the user to navigate video data freely. The user can select either extracted keywords or a TV program simply by clicking, and then system will immediately update the TV program listing and keywords. We conducted a brief user test, and observed that the system can effectively support the browsing activity of user, and also facilitate the finding of TV programs not considered by the user.

2. Motivation of Research

In recent years, DVD recorders with a hard disk drive and video sharing sites like Youtube have become very popular. As a result, the amount of video data that can be accessed by a user has increased dramatically, giving the user too many choices. As a result, the user faces the challenge of finding an interesting video from among a huge amount of video data.

Today, in most cases, search function is used for the user to find video data that he wants to see. The search function is appropriate if the user has clear demand in mind. However, this is not always the case when the user sits in front of the TV set (or computer). Sometimes he has a very vague idea like "Show me something interesting." He himself does not know what "interesting" is. As a result, he cannot think of the initial keywords to start a search. It is also observed that a user in front of the TV changes his mind very frequently and drastically. However, current user interfaces to video data do not support such a demand.

3. Overview of Goromi-TV

Based upon the conditions described above, we have developed Goromi-TV. We made the following assumptions in the development of this system.

First, since the user of the system does not have clear demand in mind, browsing rather than searching was assumed to be effective. Current video sharing sites have a sort of browsing function by offering a "related videos" list. However, we thought that an easier and more intuitive way to browse video data was necessary. Since the use demand may be very vague, the system needs to provide a queue for the information to start browsing. For that reason, the system should be able to extract keywords from the search results and show them to the user. We assumed that the displayed keywords would stimulate interest in the user and also serve as a clue to the information previously unknown to the user.

Second, current search interfaces emphasize the precision of the search results. However for Goromi-TV, showing as many candidates as possible is considered to be an effective way to stimulate the interest of the user, even if they are not accurate.

Thirdly, since the interest of the user tends to change frequently and drastically, the system should allow the user to change the course of exploration very easily. And for the same reason, the response of the system must be very quick, and smooth to prevent the user waiting.

A screen shot of Goromi-TV is shown in Figure 1. After launching, the initial keywords are shown on the left side of the screen. The user can choose any keyword which he considers of some interest. Selected keywords move to the center of the screen, and related TV programs are shown in right side of the screen. Each TV program is shown with its title, a short description which has been downloaded from the EPG Data through the Internet, and four thumbnails. TV programs automatically move upward, so the user does not have to scroll to view them. When the user clicks on a TV program, it moves to the left center of the screen, and starts playing.

To evaluate the similarity between selected program and other programs, a number of keywords that match the title and description are used. Since the description of each program is relatively short, the number of matching keywords is not reliable. For that reason, the time frame the program was broadcasted (such as morning, noon, afternoon,
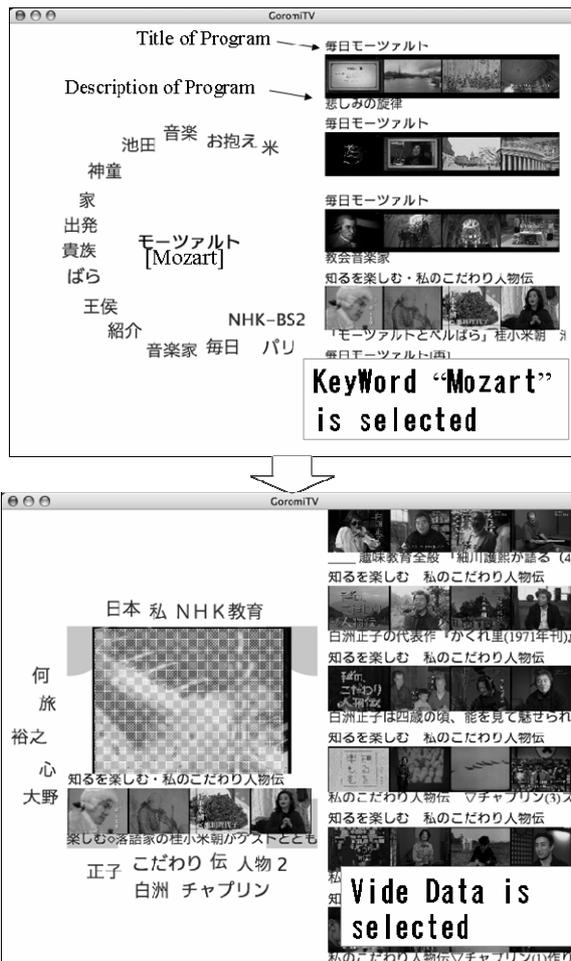
Figure 1. Screen Shot of Goromi-TV

etc.) and the length of the program is evaluated. By doing so, the similarity between almost any programs can be evaluated.

Sometimes, the user will change the course of exploration drastically. For such case, the system offers the following two operations.

(1) More: By pressing the "down arrow key," TV programs shown in right side of the screen are rapidly scrolled. This function is useful when the user thinks "the current programs are not bad, but I would like to see some more".

(2) Other: By pressing the "right arrow key," a completely different area of programs is displayed. In order to do so, the system regards the programs currently shown as negative examples, and evaluates other programs.

Each time the user selects a program, previously selected programs are shown on left side of the screen in transparent manner. This function is useful when the user has selected a sufficient number of candidates and is ready to make a final choice.

Every operation can be undone by pressing left arrow key. Therefore, the user can browse freely without worrying about becoming lost in a huge amount of TV programs.

4. User Test

We conducted a brief user test on five users. After short explanation of use, we let the users use the system as they like. After testing, we asked them about their impression of Goromi-TV. All users stated that they could experience an "encounter with unexpected information." Here is one case.

The user selected the movie "Sweet November" which he has seen before. Among the related programs shown, the user found the movie "Astronaut's Wife." At first, the user could not understand why those two movies were related. After seeing the extracted keywords, the user realized that "Charlize Theron" was playing in both movies. He knew Charlize Theron, but he did not know she was playing in "Sweet September". Therefore, discovery was an interesting surprise for him.

5. Related Work

Baudisch, et al., has proposed TV Scout which enables the user to make a personalized TV schedule [1]. Although the interface and intended usage are different from Goromi-TV, the aim to return the recommendation results for every operation is the same. Ludwig, et al., has proposed to use the contents of EPG to search for TV program which match the current mood of the user [2]. Although Goromi-TV also uses the EPG as tag data for TV program, Ludwig does not assume a drastic change in the interest of the user, and requires more input of the current mood of the user.

6. Future Work

The current Goromi-TV works well with more than two thousand TV programs. Future challenges include integrating other types of media, such as information on the Internet or music, into a unified interface.

References

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