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METHOD AND APPARATUS FOR REMOTE INTERACTION WITH A TELEVISION SYSTEM

Background of the Invention

1. Field of the Invention

This invention relates to consumer television systems and, more particularly, to systems and methods for viewer program selection and recording of TV programs.

2. Background and Related Art

With the advent of consumer television satellite dishes, fiber optic cable, and other improvements delivering increasingly larger bandwidths to the home, the home television viewer is being bombarded with a huge increase in the number of television programs from which to select. This explosion in both quantity and quality of program content has caused the familiar practice of "time shifting" programs by VCR recording for later viewing to become even more important in enabling the view to take advantage of this improvement in television content. This, in turn, has caused great difficulty in affording the viewer a simple, user-friendly method whereby the user might easily cull through this vast quantity of program content and in an intelligent and more sophisticated way in order to make program selections, and then to make arrangements whereby some of these programs may be easily scheduled for taping as desired.

As to the current technologies available for VCR programming itself, the woeful inadequacies of such technology are legendary, resulting in the familiar comedian's jokes about how impossible it is to operate a VCR. However, even assuming this problem is addressed of physically facilitating an easier method whereby a VCR might be programmed, this in itself does not solve the other serious problem associated with



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current consumer television, namely the aforementioned problem in selecting worthwhile television programming for such recording or viewing from an exploding panoply of choices due to the increased bandwidth being delivered to the home.

Several approaches have been made in the past to address this problem of assisting the viewer in program selection. Perhaps the most familiar is the hardcopy television guide such as "TV Guide" or the various program listings appearing in local newspapers. This approach has obvious limitations, not the least of which is a limited ability to provide details about each program, with no searching capability. Still further, inasmuch as some satellite systems have as many as 1,000 or more channels, it is readily apparent that this method of providing television programming information is simply inadequate for modern needs.

One attempt to address the weaknesses of hardcopy TV guides is to provide such a TV guide through the cable, Internet or satellite provider itself. This also suffers from the weakness of the hardcopy systems in that there is no active search facility. Thus the user, even while employing a more convenient physical form of program listing by means of the program schedule appearing on the screen, is still saddled with the difficulty of traversing through huge numbers of such screens to see the programs of interest. This in turn requires traversal through much information and program listings of no interest to the viewer. Still further, these forms of hardcopy or on-TV program guides, due to the logistics of providing such a wealth of information to the end-user, are only able to show the current day's programming.

In an effort to address these problems of culling worthwhile viewing material as well as the aforementioned problem of end-users being able to easily program VCRs for time shifting, companies have sprung up which provide essentially a video clipping service for end-users. In this manner, the user completes a profile of interest. Periodically the company will then record programs which it believes are consistent with the user profile, e.g., might be of interest and a match to the user's interest, and then physically mails these tapes of potentially interesting programs to the end-user.

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This approach too suffers from extremely serious and obvious drawbacks, not the least of which are that the program selection is done by a third party, the delay and the expense of getting these physical tapes to the end-user.

Additionally, various mechanisms have been marketed in the consumer arena to attempt to simplify the VCR programming such as "VCR+". One of these systems, by means of an infrared link between the cable tuner box and the VCR seeks to enable the user to select a program from the on-screen program guide whereby an IR signal is transmitted from the cable box to the VCR with a corresponding proprietary code, thereby automatically programming the VCR. While this system is clever in implementation, it nevertheless continues to suffer from many of the drawbacks previously cited - namely that the user is still limited to a daily program guide of perhaps thousands of programs to sort through. A related approach by other companies has been to provide program code numbers associated with given programs which are physically printed in the program guides. In this manner, the end-user/viewer simply reads the physical program guide and upon selecting a program of interest, types in with a remote channel changer the proprietary code number associated with the program. Again, this does not address the need for simplification in culling desired programs from a huge listing in the first place, and has all the other significant downsides described and associated with physical hardcopy program listings.

Accordingly, a consumer television system was sorely needed which could facilitate the ability of the end-user to program a VCR for time shifting. Still further, such a system was highly desirable which could efficiently and inexpensively provide a mechanism whereby an end-user might easily be able to better select and tape programs more accurately reflecting, and in a more sophisticated and detailed manner, programs more likely meet his or her individualized viewing needs.

Summary of the Invention

A portable program selection device (PSD) stores data regarding program scheduling downloadable to the device. The device includes a database and application program as well as an end-user interface for querying the database. The database contains parameters associated with television programs such as description, time, duration, genre, channel number and unique program code associated with each program, and is key word searchable. Upon the user selecting a program either by key word searching or viewing a program channel/time grid and activating a program, the selected program is stored in the program code transferred by IR link to the remote VCR and/or television. The VCR is then automatically programmed to record the selected program at its appropriate time or the television channel automatically changed when the program selection relates to a real time program, both in response to the received program code.

According to one aspect of the present invention there is provided a method for remotely interacting with a television system comprising:

- downloading a program schedule to a first device;

- navigating said program schedule on said first device to select a program from said schedule, said navigating comprising executing a keyword search on said program schedule of a keyword corresponding to said program; and

- transmitting a signal corresponding to said program to said television system from said first device.

According to another aspect of the present invention there is provided an apparatus for remotely interacting with a television system comprising:

- means for downloading a program schedule to a first device;

- means for navigating said program schedule on said first device to select a program from said schedule, said navigating comprising executing a keyword search on said program schedule of a keyword corresponding to said program; and

- means for transmitting a signal corresponding to said program to said television system from said first device.

According to still another aspect of the present invention there is provided computer program product on a computer usable medium for remotely interacting with a television system comprising:

- program code means for downloading a program schedule to a first device;

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program code means for navigating said program schedule on said first device to select a program from said schedule, said navigating comprising executing a keyword search on said program schedule of a keyword corresponding to said program; and

program code means for transmitting a signal corresponding to said program to said television system from said first device.

Brief Description of the Drawings

Fig. 1 is a high level functional block diagram illustrating components of a program selection device employed with the system of Fig. 2.

Fig. 2 is a functional block diagram illustrating the components of the television schedule viewing and scheduling system of the invention, including a program selection device depicted in Fig. 1.

Fig. 3 is a flow diagram illustrating the operation of the system of Fig. 1.

Detailed Description

Fig. 1 illustrates a preferred embodiment of a computer system which may advantageously employ the improved GUI control protection system of the present invention. The system comprises a CPU 10, read only memory (ROM) 11, random access memory (RAM) 12, I/O adapter 13, user interface adapter 18, communications

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adapter 14, and display adapter 19, all interconnected via a common address/data and control path or bus 16. Each of the above components accesses the common bus utilizing conventional techniques known to those of ordinary skill in the art, and includes such methods as dedicating particular address ranges to each component in the system, with the CPU 10 being the busmaster. As is further shown in Fig. 1, these external devices such as DASD 15 interface to a common bus 16 through respective adapters such as I/O adapter 13. Other external devices, such as the display 21, similarly use their respective adapter such as display adapter 19 to provide data flow between the bus 16 and the display 21 or other device. Various user interface means are provided for interconnection and use with the user interface adapter 18, which, in the figure has attached thereto representative user input devices such as joy stick 23, mouse 25, keyboard 17, and speaker and/or microphone 27. The system is further provided with a conventional operating system 29 adapted to execute one or more applications 31. Each of these units is well known in as such and accordingly will not be described herein.

The invention admits to implementation on essentially any computer system and corresponding microprocessor, such as the RS/6000 (TM), RISC-based workstations and personal computers of the IBM Corporation executing the AIX (TM) and OS/2 (TM) operating systems, respectively, or similar machines of other vendors, which include for example in the case of an RS/6000 workstation a 604 PowerPC (TM) RISC chip. (RS/6000, IBM, AIX, OS/2 and PowerPC are trademarks of the IBM Corporation).

Contained with the CPU 10 of Fig. 1, typically is one or more microprocessors which performs the system address, data, and control processing functions necessary for correct operation of the system of Fig. 1. Although the invention admits to application to various microprocessor designs, in the embodiment disclosed herein, the microprocessor takes the form of a PowerPC 604 microprocessor manufactured by the IBM Corporation, which is a species of microprocessor known as a reduced instruction set computer (RISC) microprocessor. Further details regarding the architecture and

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operation of such a microprocessor may be obtained from the PowerPC 604 RISC Microprocessor Users Manual, Document #MPC604UM/AD, November, 1994, copyright IBM Corporation, which is incorporated herein by reference.

In the context of the invention, the user will view various objects such as a cursor and pop up or pop down menus on the display 21 which may be manipulated by means of various pointing devices such as the mouse 25 and voice activated navigation. Program code associated with the user interface adapter 18 by way of a device driver for the pointing device 25 and microphone 27 in conjunction with operating environment and application code resident in RAM 12 and/or DASD 15 will facilitate and enable movement of a cursor on the display screen 21 responsive to and in association with correlative voice commands spoken into microphone 27.

Turning now to Fig. 2, the program selection device (PSD) of Fig. 1 is shown in simplified form at reference numeral 42. This may take the form of essentially any hand held device such as a Palmpilot, Personal Digital Assistant (PDA), or the like. In its generic form, such a program selection device will include a small screen 43 serving the function of the display 39 of Fig. 1. It will further include an application program 68, some limited form of keyboard 70 performing the same function as keyboard 24 of Fig. 1, and a pointing device 72 similar to the pointing device 26 of Fig. 1. Additionally a hard drive 58 or other form of mass read/write storage similar to disk drive 20 of Fig. 1 is provided for purposes to be hereinafter described.

One capability of the PSD 42 is that it may be adapted to communicate with the Internet 46. This is shown by means of a link 44 to the Internet which may take the form of a telephone link wherein the PSD 42 includes cell phone capability or a connector whereby it may be plugged into a telephone jack of a modem of a computer system for accessing the Internet 46. Alternatively, the PSD 42 may be adapter to communicate with an Internet service provider (ISP) 50 by means of the link 48 which may also take the form of a telephonic link to a computer system in contact with the ISP. The purposes of these links 44, 48 and the Internet 46 or ISP 50 connection is

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that these links are to servers which are repositories of television programming data which may be downloaded to the PSD 42 preferably in a compressed form stored in the storage database 58 and readable therefrom by means of the application program 68.

This data will include preferably a great more detail than is currently available in conventional hardcopy or onscreen TV program guides, a representative sampling of such richer data being shown at screen 60 components of which may be caused to appear on the viewer readable screen 43 as desired. This dataset for each program available to the viewer might include, for example, a much more detailed description of the program, its date, time, duration, primary actors, genre type (comedy, drama, action, etc.), the channel on which it occurs, and a unique program code number associated with the program for purposes to be hereinafter described.

Additionally viewable on the screen 43 is a programming grid 64 which for each day's data downloaded to the PSD 42 includes a grid of blocks, each associated with a particular time of day and channel. Each grid block will preferably include a shorthand title or description of the program associated therewith whereby, upon employing the pointing device 72 to the particular grid block and thereby activating the block, the information shown in screen 60 will appear to the end-user on the screen 43 of the PSD 42.

Upon the viewer reviewing the information in the dataset 60 and deciding that the program is worth viewing, the end-user may thereafter activate a block such as block 61 with the pointing device 72 and cursor 62 confirming the desire to either program the VCR 54 or, if the program is ongoing in real time, to cause the TV 56 to change in real time to this program. This instruction to the VCR to program in the future to record this program or to cause the television to immediately change to the program may be effected by means of a conventional IR link 52 between the PSD 42, the VCR 54 and TV 56.

One feature of the invention is to provide for keyword searchability of the dataset 60. Thus, by navigation on the screen 43 with the pointing device 72, the user may enter by means of the keyboard 70, any keywords in order to retrieve programs of interest to the user. For example, if the user is interested in knowing if any John Wayne movies will be playing in the following week, the user may input the keywords "John Wayne" and the desired week by means of the keyboard 70, pointing device 72 and screen 43, whereupon a grid similar to that of grid 64 will appear listing any movies in which John Wayne appears.

Depending upon the detail of the program description, the user might also provide a multiword search strategy of more complexity such as "animals, Africa, science fiction", in order to query the database 58 for any programs relating to those three keywords. The invention is not intended to be limited to any particular search strategy, but rather admits to any number of databases and querying methods which may be state-of-the-art, including artificial intelligence, searching in whole or in part with a stored end-user profile, and the like. It will further be readily appreciated that the end-user may enter keywords associated with any information in the dataset 60. Thus, for example, as a keyword the end-user might enter a genre type such as "comedy" and "movie", and a date or time or in the event he or she can only view television in the upcoming hour, the upcoming hour and day might be the only keyword entry. Because of the automatic program ability feature employing the VCR 54, it is further desirable that the datasets transmitted from the Internet 46, ISP 50, or other remote link preferably will, unlike a more common hardcopy and onscreen program listings, include such program listings extending for some period into the future. In this manner, when the user selects a program in the future for programming, by employing the unique program code number associated with the program, the VCR 54 may be caused to record those programs which will be playing in the future. The user may also query with the PSD2 for the programs already selected in order to edit these choices as desired.

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Turning now to Fig. 3, there is a flow diagram depicted therein illustrating the sequence of operation of the system of Fig. 2 in order effect the objectives of the invention.

Turning to this figure now, first, it will be assumed that the end-user, by means of remote communication capability built into the PSD 42, will cause a link to occur to an appropriate program schedule source (whether it be the Internet 46, ISP 50, or other source), this step being illustrated at block 80.

The end-user will next by interaction with the PSD 42, cause a downloading of this program scheduling data to the PSD 42 by means of the links 44, 48 as appropriate, this step being shown at block 82 of Fig. 3. It should be understood that this data will desirably be in compressed format and that the PSD 42 processing capability may be employed to decompress this data.

Next, as a result of this download, the PSD 42 will cause this program scheduling data to be stored in storage 58 and, more particularly, in the form of a user queriable database. This step is shown at block 84. It will be recalled that it is preferable that the query mechanism for the database 58 be as user-friendly and sophisticated as possible so as to permit retrieval of information by user profiles, keyword entry, or other data points. It is specifically contemplated by the invention, for example, that by the user inputting profile data in the PSD 42, it may on a regular basis automatically retrieve program scheduling data on links 44 or 48, update periodically the database 58, and present to the end-user on screen 43, upcoming programs meeting the user profile criteria for future viewing and/or recording.

Continuing with Fig. 3, once this program scheduling data has been stored at block 84, the process continues to block 86 to query whether the user desires to program future programs, or, in the alternative, to view desired programs and/or edit previously scheduled programs for recording. If, in response, the end-user indicates a desire to program for future recording, the process exits along path 88, whereupon the

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user enters search criteria to be employed against the program scheduling data - this step being shown at block 92. The user search will entail, in addition to user entry of keyword searches if desired, the querying of the database 58 wherein program scheduling data resides by means of the application program 68, whereupon the results of such query are displayed on the screen 43 for user selection and interaction.

As shown at block 94, in response to this query and display of results, the user may then select a program desired for either viewing or recording, block 94. If the program has been selected for recording, this fact is stored in the storage 58 shown at block 96 whereupon the program's program code is transmitted at block 98 through the IR link 52 to the VCR 54 for subsequent recording. If on the other hand, the program is currently playing, the system of Fig. 2 will transmit a program code to effect a real time change of the program content on TV 56, shown at block 100.

Next, the system executing by means of the application program 68 will query the user on screen 43 as whether another selection to either program or view is desired, shown at block 102. If no further interaction is desired, the process exits path 106 to end 108. If, on the other hand, the user response by means of the keyboard 70 or pointing device 72 indicates that another selection is desired to program or view, system flow exits path 104 to block 86. At block 86, the system then queries again whether there is a desire to program a future program for recording or, in the alternative, to view a realtime-selected program or edit the list of programs queued for future recording. The process continues then as previously described, wherein if the user indicates a desire to program additional programs, flow exits to the left of block 86 along path 88 to execute further steps for future programming of other programs. If, on the other hand, in response to the query of block 86 the user indicates a desire to either select a program for realtime viewing or to edit the list of programs to be recorded in the future, flow exits to the right of block 86 along path 90. If an indication has been made that it is desirable to edit the program list, at block 110 this indicates that the selected program list of programs schedule for recording will be recalled and edited. If on the other hand, in response to the query at block 86, the

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viewer has indicated a desire to select a current program for viewing, the schedule will be provided for selecting programs currently playing for view, 112. The process will then exit along path 114 whereby the system then queries again whether there is any further interaction desired by the end-user. If not, the process exits to the right on path 106 to end 108.

It will be understood from the foregoing description that various modifications and changes may be made in the preferred embodiment of the present invention without departing from its true spirit. It is intended that this description is for purposes of illustration only and should not be construed in a limiting sense. The scope of this invention should be limited only by the language of the following claims.

Claims:

1. A method for remotely interacting with a television system comprising:
downloading a program schedule to a first device;
navigating said program schedule on said first device to select a program from said schedule, said navigating comprising executing a keyword search on said program schedule of a keyword corresponding to said program; and
transmitting a signal corresponding to said program to said television system from said first device.
2. The method of claim 1 wherein said signal is a program identification signal corresponding to said program.
3. The method of claim 2 wherein said television system comprises a program recording device; and
said signal causes programming of said program recording device to record said program.
4. The method of claim 2 wherein said television system comprises a television and said signal causes said television to select said program in real time.
5. The method of claim 4 wherein said program schedule includes a plurality of program descriptions.
6. The method of claim 5 wherein said program schedule covers scheduling for a plurality of days of said programs.
7. The method of claim 6 wherein said downloading is from the Internet.
8. The method of claim 7 wherein said downloading is over a wireless link between said first device and said Internet.
9. The method of claim 8 further including:
storing in said first device a text signal corresponding to said program.

10. An apparatus for remotely interacting with a television system comprising:
means for downloading a program schedule to a first device;
means for navigating said program schedule on said first device to select a program from said schedule, said navigating comprising executing a keyword search on said program schedule of a keyword corresponding to said program; and
means for transmitting a signal corresponding to said program to said television system from said first device.
11. The apparatus of claim 10 wherein said signal is a program identification signal corresponding to said program.
12. The apparatus of claim 11 wherein said television system comprises a program recording device; and
said signal causes said means for programming of said program recording device to record said program.
13. The apparatus of claim 11 wherein said television system comprises a television and said signal causes said television to select said program in real time.
14. The apparatus of claim 13 wherein said program schedule includes a plurality of program descriptions.
15. The apparatus of claim 14 wherein said program schedule covers scheduling for a plurality of days of said programs.
16. The apparatus of claim 15 wherein said downloading is from the Internet.
17. The apparatus of claim 16 wherein said means for downloading includes a wireless link between said first device and said Internet.
18. The apparatus of claim 17 further including:
means for storing in said first device a text signal corresponding to said program.

19. Computer program product on a computer usable medium for remotely interacting with a television system comprising:

program code means for downloading a program schedule to a first device;

program code means for navigating said program schedule on said first device to select a program from said schedule, said navigating comprising executing a keyword search on said program schedule of a keyword corresponding to said program; and

program code means for transmitting a signal corresponding to said program to said television system from said first device.

20. The program product code of claim 19 wherein said signal is a program identification signal corresponding to said program.

21. The program product code of claim 20 wherein said television system comprises a program recording device; and

said signal causes said program code means for programming of said program recording device to record said program.

22. The program product code of claim 20 wherein said television system comprises a television and said signal causes said television to select said program in real time.

23. The program product code of claim 22 wherein said program schedule includes a plurality of program descriptions.

24. The program product code of claim 23 wherein said program schedule covers scheduling for a plurality of days of said programs.

25. The program product code of claim 24 wherein said downloading is from the Internet.

26. The program product code of claim 25 wherein said program code means for downloading includes a wireless link between said first device and said Internet.

27. The program product code of claim 26 further including:

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program code means for storing in said first device a text signal corresponding to said program.