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TITLE OF THE INVENTION

SYSTEM FOR PROCESSING PROGRAM INFORMATION

BACKGROUND OF THE INVENTION

Field of The Invention

The present invention relates to a system for processing program information capable of efficiently displaying program information to audience.

Description of the Prior Art

In recent years, programs and image information are broadcast and transmitted through a large number of channels because of the spread and progress of satellite broadcasting, satellite communication and so on. In the case of sending information of such a program or the like, that is, program information (program guide) to audience, because of the large number of the channels, of course, the number of frames of a program table also becomes large. There are various proposals for sending or displaying easily to understand and efficiently this program table to the audience. As such a prior art, for instance, there is a program information processor (display device) shown in the Japanese Patent Laid Open No. 83888/1997. This program information processor includes first memory means for storing program information, second memory means for storing designation information for a program retrieval input by an audience, retrieving means for retrieving a

166166

program in program information on the basis of designation information, program construction control means for constructing a program table based on the retrieval result and displaying it, and program selection means in which the audience selects a program from the program table. When the audience inputs designation information, a program meeting the condition of the designation information is retrieved from large quantities of program information to make the program table. Designation information called in this prior art includes, for instance, the present time, established charge information and information of a viewed program. As an instance, when the present time is input as designation information, a program capable of being broadcast at present is retrieved. As another instance, when information of the viewed program is input as designation information, a program which has not been retrieved is retrieved. Of course, plural items of designation information can be input in one operation. As the program table made as a result of the retrieval, a table in which various channels are arranged along the vertical axis and time slots are shown along the horizontal axis as described in the above official gazette, is provided. As a matter of course, the relationship between the vertical and horizontal axes may be reversed. It is also possible that the time slots are

arranged along the vertical axis and the various channels are shown along the horizontal axis as a program table carried on a general newspaper even at present.

However, in such a prior art program information processor, because a program based on the condition of designation information is retrieved by inputting various pieces of designation information and a program is focussed in accordance with the taste or demand of the audience, there is the advantage that the audience as a user becomes easy to select a program, but the program table made by this program information processor has merely the two-dimensional display construction in which two attributes of channel and time slot are used as two axes of the vertical axis and the horizontal axis as described above. After all, it is a table of merely deleting or culling programs needless to select, from a program table generally used so far. Because of this, under the condition that the number of channels is about to become 100 or more as recent satellite broadcasting, if the program table as above is made, the two-dimensionally displayed program table itself occupies an extremely large area and the audience cannot look everywhere when searching a program or has need of a huge time for searching the program. Furthermore, if the whole program table is displayed as the program table itself though a

program in a specific time zone is to be searched, there is the defect that it is hard to search the aimed program because program columns of other time zones catch his eye.

SUMMARY OF THE INVENTION

The present invention is made in view of such a prior art problem and its object is to provide a system for processing program information in which the display structure of a program table can freely be changed in accordance with a requirement or a taste of an audience, or to at least provide a useful alternative to the prior art.

The present invention generally relates to a system for processing program information that has a construction comprising program information storage means for storing program information, and program table display means for two-dimensionally displaying a program table following two axes in accordance with two attributes among attributes given to each piece of program information, and the program table two-dimensionally displaying programs by using the attributes at will as two axes, is made.

For the purpose that an audience can determine the two-axes attributes at will, the system further comprises attribute input means through which the two-axes attributes used for two-dimensionally displaying the program table are input, and program table making means for retrieving program information in program information stored in the program information storage means on the basis of said input attributes to make the program table, and the program table display means can display the program table from the program table making means. By this manner, the program table making means retrieves program information stored in the program information storage means and can also have the function of classifying the above program information.

By this construction, although a conventional program table has merely the table structure in which time slots are arranged along the vertical axis and various channels are

arranged along the horizontal axis, the program table having a free structure without being fixed to that can be displayed and the freeness of grasping and selecting a program for the audience increases.

The present invention provides a system for processing television broadcasting program information, comprising:

a program information storage means for storing television broadcasting program information;

attribute inputting means for receiving a user's designation of two kinds of attributes among three or more kinds of attributes of said broadcasting program information;

program information retrieving means for extracting a set of program information corresponding to input attributes, said program information retrieving means including program-table-making means for making a program table using said extracted set of program information; and

program table display means responsive to said program information retrieving means for two-dimensionally displaying said set of program information in a two-axis program table wherein said two axes of the program table correspond to said two kinds of attributes designated by the user through said attribute inputting means, said two-axis program table including a plurality of cells arranged in a matrix in which each of said cells correspond to each program.

One embodiment of the invention further comprises attribute input means through which the two-axes attributes used for two-dimensionally displaying the program table are input, and program table making means for retrieving program information in program information stored in the program information storage means on the basis of said input attributes to make the program table, and has the operation that the user can select and determine the program table having a formation suiting his taste by inputting the two-axes attributes through the attribute input means and the

program table display means display the program table from the program table making means.

Preferably, the program table making means has the functions of retrieving program information stored in the program information storage means and classifying said program information.

Preferably, another attribute is selected in addition to the two-axes attributes of the program table to change over the display.

Preferably, the display is performed at the condition of culling a portion needless to be displayed when displaying the program table.

Preferably, the original program table is restored when displaying the program table.

Preferably, an attribute relative to the program is selected to change over the display.

Preferably, a new attribute can be added to and an attribute can be deleted from the program table in accordance with a selection of the attribute by a user or an input from another system.

Preferably, information registered by a user is designated as an attribute of the program table.

Preferably, when there are plural programs in a same time zone, they are displayed one upon the another as they are shifted rearward little by little, and displayed at the front one by one, and has the operation that they can be used for a program check of the same time zone without expanding the display area.

Preferably, three-axes attributes of the program table are selected by a user to display information as a three-dimensional shape.

Preferably, the attributive structure of a word relative to an attribute of the program table can be extracted from program information.

Preferably, an outline so far, pictures or sounds of a program can be stored to display and play back them.

Preferably, when a channel or a program is selected as an attribute of the program table, it is possible that the channel is changed over to the picture of the program and program relation information is displayed if the program is on the air at present, and only information relative to the program is displayed if the program is off the air.

Preferably, a channel is selected as an attribute of the program table, advertisements and program relation information are displayed in accordance with the time schedule of programs in the channel.

Preferably, program information, program relation information, program information renewal information, information registered by a user, a program, a picture, or a sound is transmitted and received.

Preferably, an image sequence made by a user is transmitted and received to be displayed in a portion of the program table.

Preferably, program information selected by a user is transmitted and the number of people viewing the same program is calculated to display the result in a portion of the program table as an audience rating or the number of audience.

The present invention provides a system for processing television broadcasting program information, comprising:

(i) a transmitter side including:

a program information storage means for storing television broadcasting program information;

program index generating means responsive to said program information stored in said program information storage means for generating a program index;

program index storage means responsive to said program index generated by said program index generating means;

program-information-with-program-index generating means for generating program information with a program index and responsive to both said program

information and said program index which are respectively stored in said program information storage means and said program index storage means;

first program-information-with-program-index storage means responsive to said program information with program index generated by said program-information-with-program-index generating means for storing said program information with program index;

first program information retrieval means for extracting a set of program information from said program information with program index fed from said first-program-information-with-program-index storage means, said program information retrieving means including first program-table-making means for making a first program table using said set of program information extracted; and

first transmitting and receiving means for transmitting said set of program information fed from said program information retrieving means; and

(ii) a receiver side including:

second transmitting and receiving means for communicating with said first transmitting-and-receiving means;

second program-information-with-program-index storage means responsive to output data from said second transmitting and receiving means for storing said program information with program index sent from said transmitter side;

attribute inputting means for receiving user's designation of two kinds of attributes among three or more kinds of attributes constituting of said broadcasting program information;

second program information retrieving means for extracting a set of program information corresponding to input attributes from said program information with program index fed from said second program information with program index storage means, said second program information

retrieving means including second-program-table-making means for making a second program table using said set of program information extracted; and

program table display means responsive to said second program information retrieving means for two-dimensionally displaying said first or second program table, as said set of program information in the form of a two-axis program table wherein said two axes correspond to said two kinds of attributes designated through said attribute input means, said two-axis program table including a plurality of cells arranged in a matrix in which each of said cells correspond to each program;

said second program information retrieving means being arranged to send an instruction via said second and first transmitting and receiving means to said transmitter side when a desired program information with program index corresponding to input attributes does not exit in said second program-information-with-program-index storage means, said instruction being sent to said first program information retrieving means so that a set of program information corresponding to attributes input by said attribute input means is extracted to be sent to said receiver side.

Preferably, a user attribute is maintained at the receiver side to retrieve program information including an index for retrieving a program, on the basis of the user attribute.

Preferably, when a retrieval was unsuccessful with program information including an index for retrieving a program, at the receiver side, a retrieval and an automatic classification are carried out at the transmitter side and the result is transmitted to the receiver side.

Preferably, when a retrieval according to the user attribute was unsuccessful with program information including an index for retrieving a program, at the receiver side, a retrieval and an automatic classification according

to the user attribute are carried out at the transmitter side and the result is transmitted to the receiver side.

Preferably, a designated program can be recorded, reserved for recording or played back in accordance with a designation of a user or an input from another system.

Preferably, programs recorded or reserved for recording are displayed along the time of the program table.

Preferably, a recorder is provided for recording information of the program viewed by a user, and has the operation that a relationship with recorded program information is examined in all programs and the program is displayed when it is judged that the relationship is high.

Preferably, it is shown whether a performer of the program appears at a certain time of a certain day or not.

Preferably, the system includes fitting degree calculation means for calculating a fitting degree between program information and each piece of program classification information, and program classification means in which, to one given piece of program classification information and a program information set, a fitting degree of each piece of program information in the program information set to program classification information, is calculated by using the fitting degree calculation means to obtain a subset of the program information set having a fitting degree not less than a given threshold value, and has the operation that a line of the program classification predetermined or designated by a user is taken as one or more attributes of the program table to display it by the program table display means.

Preferably, the system includes fitting degree calculation means for calculating a fitting degree between program information and each piece of program classification information, and program classification means in which, as to one given piece of program classification information and a program information set, a fitting degree of each piece of program information in the program information set to

program classification information, is calculated by using the fitting degree calculation means to obtain a subset of the program information set having a fitting degree not less than a given threshold value, and has the operation that the program table display means displays only a program classified into a program classification predetermined or designated by a user so that it can be distinguished from another program in the program table without depending on the form of the program table.

Preferably, the system includes program information designation means for designating a subset as to a program information set stored in the program information storage means, relative key word extraction means for extracting a characteristic word set characterising the subset from the subset of program information designated by the program information designation means, and program information extraction means for extracting characteristic word information from the designated subset by using the relative key word extraction means and extracting program classification information for discriminating and classifying program information similar to program information in the subset, and has the operation that a user can designate a proper program group and easily user-define new program classification information, and the trouble of designating a characteristic word can be omitted and a program can be classified more accurately because the characteristic word is extracted from actual program information.

Preferably, program classification information is transmitted from a user side terminal to a server side terminal, program information is classified by the program information classification means at the server side, and only program information classified into program classification information transmitted from the user side terminal is transmitted to the user side terminal, and has the operation that, by transmitting only program information

classified into program classification information transmitted from the user side terminal in a remote place, to the user side terminal to display it on the program display means of the user side terminal, the data quantity to be transmitted can remarkably be reduced in comparison to the case of transmitting all program table.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features will become

more readily apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a block diagram showing the construction of the first embodiment of a system for processing program information according to the present invention;

Fig. 2 is a data structure diagram extracting and showing an example of program information stored in the program information storage means;

Fig. 3A is a diagram showing the construction of the program table in the ordinary form having two axes of "channel" and "time" used in the above first embodiment;

Fig. 3B is a program table by day of week in relation to only the prime time used in the above first embodiment;

Figs. 4A and 4B are diagrams illustrating a change example of the display operation of the program table in the system for processing program information according to the above first embodiment;

Fig. 5A is a diagram showing the construction of the program table in the ordinary form used in the above first embodiment;

Fig. 5B is diagram showing the program table in a change form having two axes of "type" and "time" used in

the above first embodiment;

Fig. 5C is a diagram showing the program table in a change form having two axes of "type" and "audience rating" used in the above first embodiment;

Fig. 6A is a program table in a change form having two axes of "type" and "performer" used in the above first embodiment;

Fig. 6B is a program table in a change form having two axes of "performer" and "relative information" used in the above first embodiment;

Fig. 7 is a diagram showing by a table proper or improper combinations of attributes as two axes;

Fig. 8 is a block diagram showing the construction of the second embodiment of a system for processing program information according to the present invention;

Fig. 9A is a diagram showing the construction of the program table in the ordinary form having two axes of "channel" and "time" used in the above second embodiment;

Fig. 9B is a diagram showing the construction of the program table displaying separately by color the corresponding program obtained by selecting and designating the corresponding attribute in the above second embodiment;

Fig. 9C is a diagram showing the construction of

the omitting-over program table obtained by culling the parts needless to display as to the program table shown in Fig. 9B;

Fig. 10 is a block diagram showing the construction of the third embodiment of a system for processing program information according to the present invention;

Fig. 11A is a diagram showing the same program table as the omitting-over program table in the above second embodiment;

Fig. 11B is a diagram showing the program table displaying the corresponding program separately by color after restoring the above omitting-over program table to the original program table;

Fig. 12 is a block diagram showing the construction of the fourth embodiment of a system for processing program information according to the present invention;

Fig. 13A is a diagram showing the construction of the program table in the ordinary form used in the above fourth embodiment;

Fig. 13B is a diagram showing the program table in a change form having two axes of "performer" and "relative information" used in the above fourth embodiment;

Fig. 14 is a block diagram showing the construction of the fifth embodiment of a system for processing program information according to the present invention;

Fig. 15A is a diagram showing the construction of the program table in the ordinary form used in the above fifth embodiment;

Fig. 15B is a diagram showing the construction of the program table displaying separately by color the corresponding program obtained by selecting a sub-type;

Fig. 16 is a block diagram showing the construction of the sixth embodiment of a system for processing program information according to the present invention;

Fig. 17A is a diagram showing the construction of the program table in the ordinary form used in the above sixth embodiment;

Fig. 17B is a diagram showing the construction of the program table displaying the user classification items along the vertical axis and the program titles along the horizontal axis used in the above sixth embodiment;

Fig. 18 is a block diagram showing the construction of the seventh embodiment of a system for processing program information according to the present invention;

Fig. 19 is a diagram showing the construction of the same time zone program table displaying the time slots along the vertical axis and the user classification items along the horizontal axis used in the above seventh embodiment;

Fig. 20 is a block diagram showing the construction of the eighth embodiment of a system for processing program information according to the present invention;

Fig. 21A is a A diagram showing the construction of the program table in which the time slots only of the prime time are arranged along the vertical axis and the days of week are arranged along the horizontal axis, used in the above eighth embodiment;

Fig. 21B is a diagram showing the construction of the program table three-dimensionally displaying the audience rating corresponding to the program by designating the audience rating in the program table of the above Fig. 21A;

Fig. 22 is a block diagram showing the construction of the ninth embodiment of a system for processing program information according to the present invention;

Fig. 23 is a block diagram showing the construction of the tenth embodiment of a system for

processing program information according to the present invention;

Fig. 24A is a diagram showing the construction of the program table in the ordinary form used in the above tenth embodiment;

Fig. 24B is a diagram showing the construction of the picture displaying program information of the corresponding program by performing the program designation in the program table of the above Fig. 24A;

Fig. 24C is a diagram showing the construction of the picture displaying the display item of the corresponding program by performing the item designation in the picture of the above Fig. 24B;

Fig. 25 is a block diagram showing the construction of the eleventh embodiment of a system for processing program information according to the present invention;

Fig. 26A is a diagram showing the construction of the program table in the ordinary form used in the above eleventh embodiment;

Fig. 26B is a diagram showing the construction of the picture displaying program information of the corresponding program on the air at present by performing the channel designation in the program table of the above Fig. 25A;

Fig. 26C is a diagram showing the construction of the other picture displaying an image of the program in parallel with the picture display of the above (b);

Fig. 27 is a block diagram showing the construction of the twelfth embodiment of a system for processing program information according to the present invention;

Fig. 28A is a diagram showing the construction of the program table in the ordinary form used in the above twelfth embodiment;

Fig. 28B is a diagram showing the construction of the picture displaying program information of the corresponding program on the air at present by performing the channel designation in the program table of the above Fig. 28A;

Fig. 28C is a diagram showing the construction of the picture displaying program information of another corresponding program on the air at present by performing the channel designation at another time in the program table of the above Fig. 28A;

Fig. 29 is a block diagram showing the construction of the thirteenth embodiment of a system for processing program information according to the present invention;

Fig. 30A is a diagram showing the construction of

the program table in the ordinary form used in the above thirteenth embodiment;

Fig. 30B is a diagram showing the construction of the image picture obtained by designating the program that had already been on the air, in the program table of the above Fig. 30A;

Fig. 31 is a block diagram showing the construction of the fourteenth embodiment of a system for processing program information according to the present invention;

Fig. 32A is a diagram showing the construction of the program table in the ordinary form used in the above fourteenth embodiment;

Fig. 32B is a diagram showing the construction of the image sequence image picture obtained by selecting the user channel in the program table of the above Fig. 32A;

Fig. 33 is a block diagram showing the construction of the fifteenth embodiment of a system for processing program information according to the present invention;

Fig. 34 is a block diagram showing the construction of the sixteenth embodiment of a system for processing program information according to the present invention;

Fig. 35 is a block diagram showing the

construction of the seventeenth embodiment of a system for processing program information according to the present invention;

Fig. 36 is a block diagram showing the construction of the eighteenth embodiment of a system for processing program information according to the present invention;

Fig. 37 is a block diagram showing the construction of the nineteenth embodiment of a system for processing program information according to the present invention;

Fig. 38 is a block diagram showing the construction of the twentieth embodiment of a system for processing program information according to the present invention;

Fig. 39A is a diagram showing the construction of the program table in the ordinary form used in the above twentieth embodiment;

Fig. 39B is a diagram showing the construction of the image picture with the recording, play back and reservation buttons obtained by the predetermined program selection in the program table of the above Fig. 39A;

Fig. 40A is a diagram showing the construction of the picture when performing the recording reservation operation in the image picture of Fig. 39B;

Fig. 40B is a diagram showing the construction of the program table clearly displaying the time zone in which the recording or recording reservation was performed in the picture of the above Fig. 40A;

Fig. 41 is a block diagram showing the construction of the twenty-first embodiment of a system for processing program information according to the present invention;

Fig. 42A is a diagram showing the construction of the program table in the ordinary form used in the above twenty-first embodiment;

Fig. 42B is a diagram showing the construction of the program table in which the program corresponding to the program having ever been viewed is different in color from the other programs, obtained by the button operation in the picture of the above Fig. 42A;

Fig. 43 is a diagram showing the user classification program table when designating the user classification operation in the program table shown in Fig. 42A;

Fig. 44 is a block diagram showing the construction of the twenty-second embodiment of a system for processing program information according to the present invention;

Fig; 45 is an image diagram showing the process

operation content of the classification method by the adaptation degree calculation means in the above twenty-second embodiment;

Fig. 46 is an image diagram of the classification result of program information by the program information classification means;

Fig. 47 is a block diagram showing the construction of the twenty-third embodiment of a system for processing program information according to the present invention; and

Fig. 48 is a block diagram showing the construction of the twenty-fourth embodiment of a system for processing program information according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, embodiments of the present invention will be described in detail with reference to accompanying drawings.

First Embodiment

Fig. 1 is a block diagram showing the construction of the first embodiment of a system for processing program information according to the present invention. In Fig. 1, the reference 1 denotes program information storage means for storing received program

information, 2 does attribute input means through which attribute information to be used as two-axes attributes of a program table and the others of attribute information are input, 3 does program information retrieval/classification means as program making means for retrieving or classifying a program in program information on the basis of input attribute information to make the program table, and 4 does program table display means for displaying the made program table.

Here, in attribute information to be used as the two-axes attributes, although it goes without saying that time slots (hereinafter, merely called time) and channels conventionally used are included, not limited to those attributes, there are various attributes, for instance, attributes such as days of week and prime times in relation to time, and category (type) attributes such as news, weather reports, dramas, sports (may be by event), song programs, cooking programs and education programs in relation to the type of program, furthermore, attributes in relation to sponsors, attributes in relation to performers or producers, information relative to programs (such as home pages, books and CDs), program forms (such as live, rebroadcast, bilingual, teletext, digest, high-definition broadcasting, wide-vision broadcasting and stereophonic broadcasting), an audience rating,

broadcasting areas, commentaries, G-codes, and so on.

Fig. 2 is a data structure diagram showing an extracted instance of program information stored in the program information storage means 1. As shown in this drawing, program information is displayed as a directory in the form of a table 150. A detailed content of each piece of program information is separately housed. The names of TV stations providing programs are described in station name columns 151 of this table 150 and the dates and times and the days of the week when those programs are broadcast are described in date columns 152 and day-of-week columns 153, respectively. The broadcasting start times and the broadcasting end times of those programs are described in broadcasting start time columns 154 and broadcasting end time columns 155. The titles of storage means programs are described in program title columns 156. The contents of the storage means programs are described in outline in program content columns 157. Furthermore, in program classification columns 158, the types which the programs belong to are described with corresponding numerical values and the names of the types (0: others, 2: sports, or the like).

As the detailed content of program information, data as follows is housed. This is an example using program information of the pro baseball broadcast from

nineteen to twenty fifty-four of May 31, 1997, on the fourth line in Fig. 2. The detailed content of this piece of program information has a data structure such as "975310000000186, 01, E8004, Nihon Television, 19970531,199780531, 1, Saturday, 19:00, 20:54, pro baseball, Koshien Stadium, Hanshin vs Kyojin, commentator: Koji Yamamoto, Kozo Kawato, announcer: Bin Ogi,(maximum extension to 9:24, move back programs after), Hanshin lack of force of the batting because of throwing out Greenwel. But the sense of stability of the starting pitching staff of Yabu, Kawajiri, et al., has increased. If the first run is scored by surely seizing a few chances and then the attack of Kyojin is stopped by the defensive force including pitcher ..., (called off) Super Special 97 "song battle of famous songs of Showa vs. hit songs of Heisei", 471832, 01000000000000000000000000, 2, sports," As for the other programs, the detailed contents are almost the same and have the contents briefly reporting the contents of the respective programs.

As for the system for processing program information constructed as above, the operation will be described hereinafter. Figs. 3A and 3B are diagrams for illustrating display operations of the program table in the system for processing program information according to

the above first embodiment. In this first embodiment, when displaying the program table 101, as shown in Fig. 3A, at first, as a base display operation, the program table 101 in which time slots are arranged along the vertical axis 102 and various channels are arranged along the horizontal axis 103 is two-dimensionally displayed on the program table display means 4. On the positions adjacent to the axes of the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105, and display columns for other two-axes attributes for changing the construction of the program table, that is, change attribute display columns 106 and 107. In the instance of Fig. 3A, "time" is displayed in the present attribute display column 104 and "CH" representing channel is displayed in the present attribute display column 105. "prime time" as another piece of attribute information capable of constituting the two-axes attributes is displayed in the change attribute display column 106, and " day of week" as another piece of attribute information likewise capable of constituting the two-axes attributes is displayed in the change attribute display column 107. The above-described attribute display columns 104, 105,

106 and 107, or various display columns described later each has the function as a operation button that, when the display column is clicked by data input means (a mouse or the like), the operation displayed therein is performed or the picture is changed to show the matter displayed therein.

If an audience designates the respective attributes "prime time" and " day of week" from the change attribute display columns 106 and 107, those attributes are considered input through the attribute input means and the program information retrieval/classification means 3 makes a program table using the respective attributes as the two-axes attributes and the program table by day of week relative to only the prime time (eight o'clock to ten o'clock), that is, the program table 108 in which the time slots only of the prime time (eight o'clock to ten o'clock) are arranged along the vertical axis 102 and the days of week (Monday, Tuesday, Wednesday, ...) are arranged along the horizontal axis 103, is displayed on the program table display means 4. In Figs. 3A and 3B, squares other than the axes 102 and 103 are program information display columns 109, in which respective corresponding pieces of program information are displayed or stored as data in a memory of the program table display means at the conditions of being able to display.

Here, the operation of the program information retrieval/classification means 3 used in the present invention will be described. The program information retrieval/classification means 3 has either or both of the functions of retrieval and classification in addition to the function of making a program table. Here, the retrieval function will be described first (the classification function will be described in the sixth embodiment).

As the attributes input through the attribute input means 2, there are various pieces of attribute information, for instance, the time (the date, the day of week, the prime time, the start time, and the end time), the channel, the type (such as news, weather reports, dramas, and sports), the subtype, the title, the sponsor, the performer (the role, and the number of appearance), the producer, program relation information (such as home pages, books and CDs), program forms (such as live, rebroadcast, bilingual, teletext, digest, high-definition broadcasting, wide-vision broadcasting and stereophonic broadcasting), an audience rating, broadcasting areas, commentaries, G-codes, and so on. Not merely the attributes but also attribute values can be considered.

In Figs. 3A and eB, the buttons such as "CH", "time", "day of week" and "prime time", and each square of

the program table, that is, the program display column 109 correspond to the attribute input means 2 in Fig. 1. For instance, if the buttons of " day of week" and "prime time" are operated, from the attribute of "day of week", the part of "Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday" is obtained from the data of "day of week: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday".

Furthermore, from the attribute of "prime time", the part of "20, 21, 22" is obtained from the data of "prime time: 20, 21, 22" stored in attribute structure storage means. The attribute structure storage means is memory means for storing data relative to the attribute, the construction and operation of which will be described in the description of a later embodiment. Program information satisfying those two attribute values is retrieved from the program information storage means 1 of Fig. 1 through the program information retrieval/classification means 3, and the corresponding position of the program table is determined to display it on the program table display means 4. In Fig. 1, the attribute structure storage means is in default.

As described above, in this embodiment, as a manner of view other than the ordinary program table

comprising the two axes of existing channel and time, the user can look the program table in the form that he likes to look, by designating by himself the two attributes (two-axes attributes) that he likes to look. Furthermore, he can designate the attribute by the data constituted by an attribute stored in the attribute structure storage means and the attribute value. From that, in conventional retrieving systems, there are many cases that the retrieval result is shown as a list by a certain attribute, for instance, an attribute such as ranking. In the case of the display in relation to two attributes by this manner, as the display, two lists or the display in relation to the attributes on or after the second in each item in the list is required. In contrast to this, by including the retrieval result in this table form, because at least the two attributes of the vertical and horizontal axes can be used, in the case of the two attributes, the display is possible by one table. As for attributes on and after the third, the displays in relation to those attributes can be inserted in the program display columns 109 in the table similarly to the list. As described above, the merit as the table can be utilized for the retrieval result, furthermore, the display can be proposed to the user without changing the display image.

Figs. 4A and 4B are diagrams for illustrating

modified examples of display operations of the program table in the system for processing program information according to the above first embodiment. In this modified operation of the first embodiments, at the position adjacent to the right side of the program table 108 in the display picture displaying the program table 108, there are provided attribute display columns 110 and 111 for further changing the construction of the program table. In the example of Fig. 4A, "NEWS (news)", which is one of the types of programs, is displayed in the attribute display column 110, and "audience rating" representing an item attribute wanted to investigate is displayed in the other attribute display column 111.

If the audience designates the respective attributes of "NEWS" and "audience rating" from the attribute display columns 110 and 111, those attributes are considered input through the attribute input means, and the program information retrieval/classification means 3 makes a program investigation result table 112 along the respective attributes to display the audience rating investigation result table 112 of the news program by the date of week in relation to only the prime time (eight o'clock to ten o'clock), on the program table display means 4. By this manner, changing over the display becomes possible by selecting other attributes in addition

to the two-axes attributes of the program table 101 or 108. In this case of Figs. 4, if buttons such as "audience rating" and "NEWS", which are attributes other than the buttons of the two-axes attributes of the program table 101 such as "CH", "time", "day of week" and "prime time", are operated, program information corresponding to those is retrieved from the program information storage means 1 shown in Fig. 1 through the program information retrieval/classification means 3 to display it on the program table display means 4.

By this manner, in relation to relative attributes other than the attributes on the two axes of the program table 101, they can be looked with relation to the program table 108 or 112, and more various measures for viewing the program table can be proposed to the user.

Furthermore, as another operation form, for instance, in the condition that the ordinary program table 101 is displayed on the program table display means 4, if the user inputs "type" and "time" through the attribute input means 2, (because the time is not selected, it is input by default), from program information of Fig. 2, the fields of the type and the time of each piece of program information are checked to select one in which the same contents are described in both of them, and the program is arranged in the columns of the corresponding type and the

corresponding time of the program table. As for the two-axes attributes, from program information of Fig. 2, different attributes relative to the input attributes are used. Also in the case of selecting other attributes, it is similar. In the case of selecting only one attribute of the two-axes attributes, the old attribute is used for the attribute not selected. By the above operation, on the program table display means 4, from the ordinary program table 101 shown in Fig. 5A, a program table 159 in which "type" and "time" are used for the two axes as shown in Fig. 5B, is displayed. As for the change operation of the display of the program table by a selection operation of the two-axes attributes, a little more description will be made. In the display condition of Fig. 5B, if the user inputs "type" and "audience rating" through the attribute input means 2, a program table in which each attribute is used for the two axis is displayed as shown in Fig. 5C. Next, in the display condition of Fig. 5C, if the user inputs "type" and "performer" through the attribute input means 2, performers are enumerated on the vertical axis 102 as shown in Fig. 6A and the type is shown on the horizontal axis 103 to display a program table in which each attribute is used for the two axes. Furthermore, in the display condition of Fig. 6C, if the user inputs "performer" and "relative information" through the

attribute input means 2, the performers are enumerated on the vertical axis 102 as shown in Fig. 6B and information such as CDs, books and home pages is shown on the horizontal axis 103 as relative information to display a program table in which each attribute is used for the two axes. As this manner, by optionally inputting the two-axes attributes, the form or the construction of the program table can be changed one after another.

As described above, in this embodiment, as a manner of view other than the ordinary program table comprising the two axes of existing channel and time, the user can look the program table as changing the form of the program table one after another, by designating by himself the two attributes (two-axes attributes) that he likes to look. For instance, in the above operation, if "type" and "time" are selected as the two-axes attributes, it becomes easy to find the weather report at the time nearest from now. If "type" and "audience rating" are selected, it is possible to select and view only highly popular ones among dramas. If "type" and "performer" are selected, it can be known that which performer often appears in which type. Furthermore, if "performer" and "relative information" are selected, it can be known that which performer does what activity.

Upon the input operation of the two-axes

attributes for changing the form of the program table, any attributes cannot freely be input but there are combinations of attributes improper for the two-axes attributes. Fig. 7 is a diagram for showing combinations of attributes proper or improper for the two-axes attributes by a table. In this drawing, the combinations of attributes marked by ○ are considered proper for the two-axes attributes and the combinations of attributes marked by × are considered improper for the two-axes attributes. The combinations of attributes marked by △ cannot be judged whether they are proper or improper for the two-axes attributes. For instance, if "time" and "channel" are selected as two attributes, an ordinary program table can be made. It is a combination of attributes proper for two axes. As effective combinations other than this, there are the other combinations marked by ○ and effective manners of viewing the program table can be proposed by increasing variations for showing program information to the user.

In the conventional program information retrieval system, there are many cases that the retrieval result is shown as a list by a certain attribute, for instance, an attribute such as ranking. In the case of the display in relation to two attributes by this manner, as the display, two lists or the display in relation to the attributes on

or after the second in each item in the list is required. Because that second attribute display is displayed in the form of depending on the first attribute, it cannot be considered an even display as to the attributes. That is, in contrast to laying emphasis on the first attribute, by including the retrieval result in this table form, because at least the two attributes of the vertical and horizontal axes can be used, because of an even display, in the case of the two attributes, the display is possible by one table and the manner of view from the user does not incline to one attribute. Furthermore, as for attributes on and after the third, the displays in relation to those attributes can be inserted in squares (correspond to the reference 109) in the table similarly to the list. As described above, the merit as the table can be utilized for the retrieval result, furthermore, the display can be proposed to the user without changing the display image.

2nd Embodiment

Fig. 8 is a block diagram showing the construction of the second embodiment of a system for processing program information according to the present invention. In Fig. 8, the reference 5 denotes program table omission means for culling information needless to display in a program table. The program table omission means 5 is connected between program information

retrieval/classification means 3 and program table display means to receive data from the program information retrieval/classification means 3 and send the processing result to the program table display means 4. In this second embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, the program information retrieval/classification means 3, and the program table display means 4.

The operation of the system for processing program information according to the second embodiment having this construction will be described. Figs. 9 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the second embodiment. In this second embodiment, as shown in Fig. 9A, at first, a basic program table 101 is two-dimensionally displayed on the program table display means 4. At the position (the upper position of the program table) adjacent to the program table 101 in the display picture, there is provided a retrieval attribute display column 113 for retrieving a program. In this retrieval attribute display column 113, "baseball" in relation to the type is displayed as the attribute wanted to retrieve a program.

If the user selects and designate the corresponding attribute "baseball" from the retrieval attribute display column 113, this attribute is considered input through the attribute input means 2 and the program information retrieval/classification means 3 retrieves the program corresponding to the attribute as shown in Fig. 9B to make a program table 114 in which, for instance, the corresponding programs are displayed separately by color (in this case, from the baseball through the program information retrieval/classification means 3, a program relative to the baseball is retrieved from the program information storage means 1 and the program is colored. This program table 114 is sent to the program table omission means 5. The program table omission means 5 culls the part needless to display in the program table 114, that is, programs other than the retrieved program relative to "baseball" and makes an omitting-over program table 115 as shown in Fig. 9C to send it to the program table display means 4. In this case, the program table omission means 5 culls the other non-relative part from the program table to remain only the part of the time and channel including the colored program (in general, the program table is colored and all of them are displayed but the two axes not colored are found by the program table omission means not to display the part). By this manner,

the above omitting-over program table 115 is displayed on the program table display means 4. By this manner, the audience can look the program table in which only the program he likes to know is displayed in a condensed manner from the enormous amount of program information. Particularly in the case of the program table display means 4 having a small display area for the program table, only a part can be displayed by scrolling or the like. By the method of this embodiment, the non-relative parts are omitted as much as possible and viewing in a small display area becomes possible.

3rd Embodiment

Fig. 10 is a block diagram showing the construction of the third embodiment of a system for processing program information according to the present invention. In Fig. 10, the reference 6 denotes attribute storage means for storing attribute information input through attribute input means 2, and 7 does restoration input means for inputting a restoration instruction for culled program information. In this third embodiment, the other construction of the system for processing program information is the same as the above second embodiment and includes program information storage means 1, the attribute input means 2, program information retrieval/classification means 3, program table display

means 4, and program table omission means 5. The attribute storage means 6 is connected to receive data from the attribute input means 2 and send stored data to the restoration input means 7. The restoration input means 7 is connected to receive data from the attribute storage means 6 and send the restoration input data to the program information retrieval/classification means 3 and the program table omission means 5.

The operation of the system for processing program information according to the third embodiment having this construction will be described. Figs. 11 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the third embodiment. In this third embodiment, the program table shown in Fig. 11A is the same as the omitting-over program table 115 in the above second embodiment. At the position (the upper position of the program table) adjacent to the omitting-over program table 115 in this display picture, there is provided a restoration instruction column 116 abreast with a retrieval attribute display column 113 for retrieving a program.

After displaying the above omitting-over program table 115, if the audience instructs a restoration from the restoration instruction column 116, this command data

are considered instructed and input through the restoration input means 7 and the restoration input means 7 reads out a restoration attribute from the attribute storage means 6 to send it to the program information retrieval/classification means 3 and gives an operation instruction to this program information retrieval/classification means 3. By this manner, as shown in Fig. 11B, the program information retrieval/classification means 3 retrievals a program corresponding to the previously instructed retrieval attribute to make a program table 114 in which the corresponding program is displayed separately by color. The program table omission means 5 is stopped operating for processing by an instruction signal from the restoration input means 7. Although this program table 114 is sent to the program table omission means 5, because the program table omission means 5 is at the condition of stopping the operation, the program table 114 is sent as it is to the program table display means 4 to display it. By this manner, the audience can look the program table 114 restored as shown in Fig. 11B. It is effective if he likes to look the omitted part in the program table having been once omitted.

For instance, as a concrete operation successive from the second embodiment to the third embodiment, if

"baseball" is selected in the program table 101 in Fig. 9A, the programs relative to the baseball are colored in the program table 114 (Fig. 9B). This processing operation is performed by retrieving the programs relative to the baseball from the program information storage means 1 from the baseball through the program information retrieval/classification means 3 to color the programs. Only the parts of the times and channels including the colored programs are left and next, the other parts having no relation are culled from the program table to obtain the program table 115 as shown in Fig. 9C. This processing finds two axes not being colored by the program table omission means 5 from the program table (yet the ordinary program table at this time) displayed by merely partially being colored not to display the part. After this, if the button 116 of "to original" is operated in Fig. 11A, the restored program table 114 as shown in Fig. 11B is displayed.

4th Embodiment

Fig. 12 is a block diagram showing the construction of the fourth embodiment of a system for processing program information according to the present invention. In Fig. 12, the reference 8 denotes program relation information storage means for storing information relative to the program, and 9 does program relation

information retrieval/classification means for retrieving and classifying program relation information. In this fourth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, program information retrieval/classification means 3, and program table display means 4. The program relation information storage means 8 stores information relative to respective program information sentences, for instance, performers, the producer, the sponsor, the explanation home page address of the program, CDs, books, and so on. This program relation information storage means 8 is connected to the program relation information retrieval/classification means 9 to send data stored therein to the program relation information retrieval/classification means 9. The program relation information retrieval/classification means is connected to retrieve and classify the above program relation information and send the retrieval/classification result to the program information retrieval/classification means 3.

The operation of the system for processing program information according to the fourth embodiment having this construction will be described. Figs. 13 are

diagrams for illustrating the display operation of the program table in the system for processing program information according to the fourth embodiment. In this fourth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 13A. At the positions adjacent to the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105 and a display column for other two-axes attributes for changing the construction of the program table, that is, a change attribute display column 107. Another attribute display column 111 for changing the construction of the program table is provided. In the example of Fig. 13A, "time" is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105. In the change attribute display column 107, "day of week" as another piece of attribute information capable of being the two-axes attributes is displayed. In the other attribute display column 111, an operation button display of "audience rating" showing the item attribute wanted to investigate is performed. Furthermore, at the position adjacent to the program table 101 in this

display picture, there are provided a relative information display column 117 and a performer display column 118 for displaying or designating a performer corresponding to one item of the relative information.

If the audience inputs the attributes of "performer" and "relative information" through the attribute input means 2 to select "performer" for the attribute of the vertical axis of the program table 101 and "relative information" for the attribute of the horizontal axis, the program information retrieval/classification means 3 makes a demand for data to the program relation information retrieval/classification means 9. With this, the program relation information retrieval/classification means 9 makes a demand for data to the program relation information storage means 8 to receive a delivery of data. The program relation information retrieval/classification means 9 retrieves and classifies relative information in program relation information to send it to the program information retrieval/classification means 3. By this manner, a relation program table 119 in which sets of performers (Yukiko Sakurai, Takuya Kimura, Arisa Mizuki, ... are listed up on the vertical axis 102) and relative information (CD, book and home page are listed up on the horizontal axis 103) are two-dimensionally

displayed in the form of a table as shown in Fig. 13B, is made. This relation program table 119 is sent to the program table display means 4 to be displayed. By this manner, the audience can look information relative to the program as shown in Fig. 13B and the user can obtain not merely information directly relative to the program but information indirectly relative to it. There are the case that the program relation information retrieval/classification means 9 and the program relation information storage means 8 are locally disposed and the case that they are remotely disposed.

By this manner, not merely information directly relative to the program but information indirectly relative to it can be proposed to the user. For instance, in the case of the program relation information storage means 8 of a recording medium such as CD-ROM and DVD (digital video disk), in accordance with the program selection in the program table, it is possible that an image or a sound from the recording medium is played or information such as a text used in the program, a dictionary and an encyclopedia is displayed. If the program relation information storage means 8 is a home page or the like on a network, a page relative to the program can be retrieved by the program relation information retrieval/classification means 9 to be

displayed. Although the selection of the attribute has been described here, the case of adding a certain attribute to another attribute can be considered. For instance, it is such as a combination of the attribute of audience rating and the attribute of type (drama) as shown in the following two tables.

[Table 1]

		Attribute 1		
		Attribute value 11,	Attribute value 12,	Attribute value 13
Attributes 2 and 3	Attribute value 21 and Attribute 31			
	Attribute value 22 and Attribute 31			
	Attribute value 23 and Attribute 31			

[Table 2]

		Channel		
		NHK,	NHK Education,	Nihon Television
Audience rating and Dramas	Dramas not less than 30%			
	Dramas not less than 20%			
	Dramas not less than 10%			

5th Embodiment

Fig. 14 is a block diagram showing the construction of the fifth embodiment of a system for processing program information according to the present invention. In Fig. 14, the reference 10 denotes attribute input means display means for displaying information input to attribute input means, and 11 does attribute structure storage means for storing data relative to the structure of the attribute input through the attribute input means. In this fourth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, the attribute input means 2, program information retrieval/classification means 3, and program table display means 4. The attribute input means display means 10 is connected to the attribute input means 2 to display the input means data and connected to send data to the attribute structure storage means 11. The attribute structure storage means 11 is connected to send data to and receive data from the attribute input means display means 10.

The operation of the system for processing program information according to the fifth embodiment having this construction will be described. Figs. 15 are diagrams for illustrating the display operation of the program table in the system for processing program

information according to the fifth embodiment. In this fifth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 15A. At the position (the upper position of the program table) adjacent to the program table 101 in the display picture, there is provided a retrieval attribute display column 113 for retrieving a program. In this retrieval attribute display column 113, "baseball" relative to the type is displayed as the attribute wanted to retrieve a program.

If the audience selects and designates the corresponding attribute "baseball" from the retrieval attribute display column 113, "baseball" is considered input through the attribute input means 2, and the attribute input means display means 10 picks out the part of "high-school baseball, pro baseball, major leagues" corresponding to "baseball" from the data of "baseball: high-school baseball, pro baseball, major leagues" stored in the attribute structure storage means 11 to display buttons (113a, 113b and 113c, respectively) of those attributes. By this manner, the attributes relative to the subtypes of so-called "baseball" are given as candidates and the attributes relative to the subtypes are displayed. If the audience further selects any (for instance, the high-school baseball 113a) of the subtypes,

the program information retrieval/classification means 3 retrieves a program corresponding to the attribute as shown in Fig. 15B and, for instance, makes a program table 101a in which the corresponding program is displayed separately by color (in this case, from the high-school baseball through the program information retrieval/classification means 3, a program relative to the high-school baseball is retrieved from the program information storage means 1 to color the program). This program table 101a is sent to the program table display means 4 to be displayed thereon. By this manner, it becomes possible to perform the program retrieval in the more specialized type to make and display the program table. It becomes possible to input not only in relation to the statically fixed attribute but also in relation to another relative attribute.

By this manner, although the subtype to the type is proposed to the user as the attribute and it becomes possible to focus the program, by displaying the attribute relative to the program, for instance, performers, rebroadcast, teletext, manager comment, time, channel, title, and key words such as O-157, AIDS and earthquake as the attribute value relative to the program, as the attribute input 2 to be proposed to the user, a new manner of viewing the program table to the user can be proposed

by combining those attributes.

6th Embodiment

Fig. 16 is a block diagram showing the construction of the sixth embodiment of a system for processing program information according to the present invention. In Fig. 16, the reference 11 denotes attribute structure storage means for storing data relative to the structure of the attribute input through attribute input means, and 12 dose attribute structure establishment means for establishing the attribute structure. In this sixth embodiment, the other structure of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, the attribute input means 2, program information retrieval/classification means 3, and program table display means 4. The attribute structure storage means 11 is connected to send data to and receive data from the attribute input means 2. The attribute structure storage means 11 is connected to the attribute input means 2 to store the instruction data of the attribute input through the attribute input means 2. The attribute structure storage means 11 is also connected to the attribute structure establishment means 12 to receive data from the attribute structure establishment means 12 and store them.

The operation of the system for processing

program information according to the sixth embodiment having this construction will be described. Fig. 17 is a diagram for illustrating the display operation of the program table in the system for processing program information according to the sixth embodiment. Here, the classification function of the program information retrieval/classification means 3 will be described. Through the attribute structure input means 12 in Fig. 16, the attribute structure is input by the user. As the attribute structure, for instance, there are "computer: software, CG, personal computer, ..." and so on. This means that, in the user definition type of "computer", each key word of "software, CG, personal computer, ..." appears. Then, the program information retrieval/classification means 3 takes matching with program information stored in the program information storage means 1 by this attribute structure, for instance, the letter line of data as shown in Fig. 2 and classifies each program to add classification information to each program, for instance, add classification information as "computer" in the case of good matching with the key word of "software, CG, personal computer, ..." or the like. The above key word for the user classification of "software, CG, personal computer, ...", that is, the attribute structure is input through the attribute

structure establishment means 12 by designating "computer" when the audience likes to look (or look for from the program table) the program relative to the computer. This attribute structure is stored in the attribute structure storage means 11. The attribute structure not registered by the audience himself can also be input through the attribute structure establishment means 12. In the example of the above computer, as other attribute structures to be input, for instance, there are terms such as application and protocol.

Under such a condition of program information being classified, upon the display operation of the program table in this sixth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 17A. At the position adjacent to the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105, and a display column for other two-axes attributes for changing the construction of the program table, that is, a change attribute display column 107. There is also provided another attribute display column 111 for changing the construction of the program table. In the example of Fig.

17A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105. In the change attribute display column 107, "day of week" as another piece of attribute information capable of being the two-axes attributes is displayed. In the other attribute display column 111, an operation button 100 of "user classification" representing the attribute that the audience classifies and establishes based on his taste, interest or requirement, is displayed.

If the audience selects and designates the corresponding attribute "user classification" from the attribute display column 111, "user classification" is considered input through the attribute input means 2 and, for instance, the part of "software, CG, personal computer, ..." is obtained from "computer: software, CG, personal computer, ..." stored in the attribute structure storage means 11, and the input to the program information retrieval/classification means 3 is performed by using those as the key word. The program information retrieval/classification means 3 performs the retrieval on the basis of the user attribute previously established to the program information storage means 1, and classifies information received from the program information storage means 1 to make the user classification program table 120

as shown in Fig. 17B. In this user classification program table 120, various kinds of user classification items such as "computer", "diving", "my taste", ..., are displayed along the vertical axis 102, and various kinds of program titles are displayed along the horizontal axis 103 in the predetermined order such as "1", "2", "3", ... The user classification program table 120 is sent to the program table display means 4 to be displayed. By this manner, the audience can obtain the program table meeting the classification based on his taste or the like, and easily perform the program selection.

As another operation, it is possible that the program information retrieval/classification means 3 previously classifies program information stored in the program information storage means 1 from "computer: software, CG, personal computer" stored in the attribute structure storage means 11 so that the classification item is "computer" if the key word of "software, CG, personal computer" is included, and, if "user classification" is selected through the attribute input means 2, the part of "computer" of "computer: software, CG, personal computer" is taken out of the attribute structure storage means 11, the retrieval is performed from the program information storage means 1 through the program information retrieval/classification means 3 by using this key word,

and the user classification program table 120 is made by classifying the corresponding programs to display it on the program table display means 4. By this manner, because the program table is displayed in accordance with the user classification method previously registered, the program table fitting the audience can be made by making the user definition attribute.

As described above, in this embodiment, because the user definition attribute structure can be established, the manner of viewing program information by this attribute defined by the user can be expanded. Although the type of the program is defined in this example, it is also possible that, for instance, program titles to be classified are directly defined such as "child: Ponkikkies, Tales of old Japan", or they are defined in levels such as

"child: animation, educational program", ... (the first level)

"animation: Doraemon, Sazae san", "educational program: saga drama, English conversation", ... (the second level)

and they are actually used as

"child: Draemon, Sazae san, saga drama, English conversation".

By this manner, in addition to the conventional manner of viewing the program table, the manner from the point of

view that the user likes to look is possible.

7th Embodiment

Fig. 18 is a block diagram showing the construction of the seventh embodiment of a system for processing program information according to the present invention. In Fig. 18, the reference 13 denotes same time zone detection means for detecting programs in the same time zone from program information. In this seventh embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, program information retrieval/classification means 3, and program table display means 4. The same time zone detection means 13 is connected to detect the programs in the same time zone based on program information sent from the program information retrieval/classification means 3 and send them to the program table display means 4.

The operation of the system for processing program information according to the seventh embodiment having this construction will be described. Fig. 19 is a diagram for illustrating the display operation of the program table in the system for processing program information according to the seventh embodiment. In this seventh embodiment, the table shown in Fig. 19 is a same

time zone program table 121. In this same time zone program table 121, time slots are arranged along the vertical axis 102 and various user classification items such as "computer", "diving", "my taste", ..., are displayed along the horizontal axis 103. In the example of Fig. 19, the prime time is selected as the time slot. When there are plural programs in a predetermined time zone as to a certain user classification item as a result of the retrieval and classification, those plural programs are displayed at the condition that they are overlapped on the corresponding program information display columns 109. In Fig. 19, the "computer" item in 19 o'clock zone, the "my taste" item in 22 o'clock zone and so on correspond to the overlap displays of the above pieces of program information.

In this display condition, if a program displayed with overlapping is selected (here, for instance, "Ii Hito" is selected), "Ii Hito" is considered input through the attribute input means 2 and the attribute becomes the attributes of the two axes of the table, "my taste" and "22 o'clock" and the corresponding programs are retrieved from the program information storage means 1 by this attribute to display them in order. In this retrieval and display operation of program information, in the initial overlap program display, the same time zone detection

means 13 detects the programs broadcast in the same time zone from the program information storage means 1 through the program information retrieval/classification means 3 to display the images overlapped by the detected number, on the program table display means 4. By clicking the program information display item 109 in which the plural pieces of program information are overlapped and displayed, by the data input means, the overlapped programs can be looked in order as the pages are turned. By this manner, information of the programs in the same time zone can be looked without expanding the display area.

8th Embodiment

Fig. 20 is a block diagram showing the construction of the eighth embodiment of a system for processing program information according to the present invention. In Fig. 20, the reference 14 denotes three-dimensional program table display means for three-dimensionally displaying the program table. This three-dimensional program table display means 14 is used instead of the program table display means 4 and can display a predetermined piece of information in a three-dimensional construction. In this eighth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute

input means 2, and program information retrieval/classification means 3.

The operation of the system for processing program information according to the seventh embodiment having this construction will be described. Figs. 21 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the eighth embodiment. In this eighth embodiment, in Fig. 21A, the program table by day of week in relation to the prime time (8 o'clock to 10 o'clock), that is, the program table 108 in which time slots only of the prime time (8 o'clock to 10 o'clock) are arranged along the vertical axis 102 and the days of week (Monday, Tuesday, Wednesday, ...) are arranged along the horizontal axis 103, is displayed on the three-dimensional program table display means 14. "time" representing the time slot is displayed in the present attribute display column 104 in the vicinity of the program table 108 and "CH" representing the channel is displayed in the present attribute display column 105. "prime time" is displayed in the change attribute display column 106 and "day of week" is displayed in the change attribute display column 107. "audience rating" representing the item attribute wanted to investigate is displayed in the other attribute display column 111.

If the audience selects the audience rating from the attribute display column 111, those attribute instructions are considered input through the attribute input means and the program information retrieval/classification means 3 performs the retrieval of the program information storage means 1 on the basis of the attribute. At this time, the program information retrieval/classification means 3 retrieves the corresponding audience rating from the program information storage means 1 as to each set of attributes of "Monday, Tuesday, Wednesday, Thursday, Friday" and "8 o'clock, 9 o'clock, 10 o'clock" of the attributes of the two axes of the program table. As shown in Fig. 21B, the program table 122 is displayed on the three-dimensional program table display means 14 in a three-dimensional form in accordance with the degree of the audience rating. As this manner, because information is three-dimensionally displayed, the retrieval content can be understood at a glance.

9th Embodiment

Fig. 22 is a block diagram showing the construction of the ninth embodiment of a system for processing program information according to the present invention. In Fig. 22, the reference 10 denotes attribute input means display means for displaying information input

to attribute input means, 11 does attribute structure storage means for storing data relative to the structure of the attribute input through the attribute input means, 12 does attribute structure establishment means for establishing the attribute structure, and 15 does attribute structure extraction means for extracting the attribute structure from program information. In this ninth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, the attribute input means 2, program information retrieval/classification means 3, and program table display means 4. The attribute input means display means 10 is connected to the attribute input means 2 to display the input means data and connected to send data to the attribute structure storage means 11. The attribute structure storage means 11 is connected to send data to and receive data from the attribute input means display means 10. The attribute structure storage means 11 is also connected to the attribute structure establishment means 12 and connected to receive the data of the established attribute structure from this attribute structure establishment means 12 and store them.

As for the operation of the system for processing program information according to the ninth embodiment

having this construction, the display operation of the program table like as described in relation to the above sixth embodiment, is performed. That is, because structure data relative to various attributes are stored in the attribute structure storage means 11, if the audience selects and inputs the user classification through the attribute input means 2 in Fig. 17A, the program table in which the user classification was performed is displayed as shown in Fig. 17B. This embodiment is wherein the attribute structure for performing the above user classification is extracted from program information and established.

For instance, it is assumed that the following program information is stored in the program information storage means 1. Here, for simplicity, the form of "program title, program stamp" will be described. For instance, it is assumed that there are data of "pro baseball, Koshien Stadium, Hanshin vs Kyojin" and "pro baseball news, Ya-Chu, Han-Kyo, Hiro-Yoko". "baseball" is commonly included in the program titles. In comparison with this, "Han", "Kyo" and "-" are commonly included in the program details. The attribute structure extraction means extracts the commonly included program titles and program details as the attribute structure of "baseball: Han, Kyo, -", and stores them in the attribute structure

storage means 11 through the attribute structure establishment means.

By this manner, the attribute input means 2 can automatically be generated. For instance, the attribute structure such as "O-157: sprouts, patient, self-governing body" is extracted in program information, thereby, it becomes possible that the program of a topical event such as "O-157" is presented to the user.

10th Embodiment

Fig. 23 is a block diagram showing the construction of the tenth embodiment of a system for processing program information according to the present invention. In Fig. 23, the reference 16 denotes past program information preservation means for preserving information of a program broadcast in the past, 17 does past program information storage means for storing past program information, 18 does past program information acquisition means for acquiring past program information, and 19 does program information selection means for selecting program information. In this tenth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, program information retrieval/classification means 3, and program table

display means 4. The past program information preservation means 16 receives program information from the program information storage means 1 and retrieves information of the program broadcast in the past from that to preserves it for a time. The past program information storage means 17 stores past program information preserved in the past program information preservation means. The program information selection means 19 is for selecting and inputting information of the program broadcast in the past to the past program information acquisition means 18. The past program information acquisition means 18 acquires information of the program broadcast in the past from the past program information means 17 in accordance with the selection input of program information from the program information selection means 19 to send it to the program table display means 4.

The operation of the system for processing program information according to the tenth embodiment having this construction will be described. Figs. 24 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the tenth embodiment. In this tenth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 24A. At the position adjacent to

the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 24A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105.

If the audience inputs a predetermined program (in the example of Fig. 24A, Nihon Television in the time zone of 7 o'clock) in the above program table 101 through the program information selection means 19, as shown in Fig. 24B, the picture 123 showing program information of the corresponding program is displayed on the program table display means 4 and operation buttons 124 and 125 for selecting and indicating the outlines of the parts broadcast in the past are displayed. If the audience clicks one of the operation buttons (125 in Fig. 24B), as shown in Fig. 24C, the content of past program information corresponding to that, that is, an outline picture 126 is displayed on the program table display means 4. By this manner, past program information of dramas or the like can be looked by using the system for processing program information.

11th Embodiment

Fig. 25 is a block diagram showing the construction of the eleventh embodiment of a system for processing program information according to the present invention. In Fig. 25, the reference 20 denotes time measurement means for measuring the present time, 21 dose program confirmation means for confirming a program, 22 does program image selection means for selecting a program image, and 23 does program image display means for displaying the program image. In this eleventh embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, program information retrieval/classification means 3, and program table display means 4. A clock or the like is used for the time measurement means 20 and the measurement result is output to the program confirmation means 21. The program confirmation means 21 receives program information from the program information retrieval/classification means 3 and collate it with data from the time measurement means 20 to confirm whether the program is on the air at present or not, and output the confirmation result to the program image selection means. The program image selection means 22 selects a program image in the case of the confirmation

result from the program confirmation means 21 showing that it is on the air at present, and sends it to the program image 23. The program image display means 23 displays the image of the program.

The operation of the system for processing program information according to the eleventh embodiment having this construction will be described. Figs. 26 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the eleventh embodiment. In this eleventh embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 26A. At the position adjacent to the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 26A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105.

If the audience inputs a predetermined program or a channel (in the example of Fig. 26A, the channel of Nihon Television is selected) in the above program table

101 through the attribute input means 2, as shown in Fig. 26B, a picture 127 showing program information of the corresponding program, that is, the program on the air at present, is displayed on the program table display means 4. On the other hand, if the audience designates a predetermined program in the above program table 101 and inputs it through the attribute input means 2, the designated piece of program information is sent from the program information retrieval/classification means 3 to the program confirmation means 21. The program confirmation means 21 collates based on the data from the time measurement means 20 whether the program is on the air at present or not. If it is off the air, because a signal showing that effect is output to the program image selection means 22, no image is displayed on the program image display means 23 and only the program information picture 127 is displayed on the program table display means 4 as shown in Fig. 26B. On the other hand, if it is judged that the program is on the air at present, in the above collation operation in the program confirmation means 21, a signal showing that it is on the air is output to the program image selection means 22. By this manner, the program image selection means 22 operates to select a program image, and an image picture 128 of the program is displayed on the program image display means 23 as shown

in Fig. 26C. Also in this case, the program information picture 127 may be displayed on the program information display means 4.

12th Embodiment

Fig. 27 is a block diagram showing the construction of the twelfth embodiment of a system for processing program information according to the present invention. In Fig. 27, the reference 24 denotes program relation information storage means for storing program relation information, 25 does program relation information retrieval/classification means for retrieving and classifying program relation information, and 20 does time measurement means like as in the above eleventh embodiment. In this twelfth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, program information retrieval/classification means 3, and program table display means 4. In the program relation information storage means 24, relation information of storage means programs, for instance, information of sponsors or the like is stored. The program relation information retrieval/classification means 25 receives program information from the program information retrieval/classification means 3 to retrieve and classify

program relation information relative to the program from the program relation information retrieval/classification means 25. A clock or the like is used for the time measurement means 20 and measurement result is output to the program relation information retrieval/classification means 25.

The operation of the system for processing program information according to the twelfth embodiment having this construction will be described. Figs. 28 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the twelfth embodiment. In this twelfth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 28A. At the position adjacent to the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 28A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105. The indication of "<NOW!>" given to the time axis represents the present time zone. Although the

present time zone indications " NOW!>" are displayed at two positions in Fig. 28A, the reason is that there is "the present" at each time because relative information to the program is retrieved in accordance with a time schedule as described later.

If the audience inputs a predetermined channel (in the example of Fig. 28A, the channel of Nihon Television is selected) in the above program table 101 through the attribute input means 2, relative information of the program is displayed on the program table display means 4 in accordance with the time schedule of the selected channel. In the example of Figs. 28, as for the time zone of 6 o'clock of the channel selected by the above channel selection, an advertisement display picture 129 of "Digicam" is displayed on the program table display means 4 as relative information of the program as shown in Fig. 28B. On the other hand, as for the time zone nearly of 8 o'clock according to the time schedule, an outline picture 130 of the program "the third part, Ii Hito" is displayed on the program table display means 4 as relative information of the program as shown in Fig. 28C. The time schedule in this case is controlled based on the measurement data from the time measurement means 20. What is retrieved as program relation information is previously established in the program relation information

retrieval/classification means 25.

Although program relation information is displayed by the input by the user and the time in this example, it is also possible that previous inputs by the user are maintained to renew the display of program relation information by the time changing. For instance, if a specific broadcasting station (for instance, Nihon Television) is previously selected, it is also possible to retrieve and display program relation information by the time elapsing after that.

13th Embodiment

Fig. 29 is a block diagram showing the construction of the thirteenth embodiment of a system for processing program information according to the present invention. In Fig. 29, the reference 26 denotes transmission and reception means for transmitting and receiving program information and a program image. To this transmission and reception means 26, attribute input means 2, user information input means 27, program table display means 4 and program image display means 23 are connected to constitute a reception side terminal (that is, a user side terminal). Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that

transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information retrieval/classification means 3 and user information registration means 29 are connected. Memory means 30 is connected to the program information retrieval/classification means 3. To this memory means 30, renewal information means 31 and program image selection means 22 are connected. Time measurement means 20 is connected to the program image selection means 22. The program information retrieval/classification means 3, the time measurement means 20, the program image selection means 22, the transmission and reception means 28, the user information registration means 29, the memory means 30 and the renewal information means 31 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The user information input means 27 is means for the audience to input his name, address or the like and those input data are transmitted through the transmission and reception means 26 and 28 to the server side terminal. The program table display means 4 and the program image display means 23 receive program table data and a program

image from the transmission and reception means 26 and display them, respectively.

In the server side terminal, the program information retrieval/classification means 3 retrieves and classifies various data stored in the memory means 30 and sends the result to the transmission and reception means 28. The user information registration means 29 sends user information sent from the transmission and reception means 28 which received user information transmitted from the user side terminal, to the memory means 30 and registers it. The user registration operation is carried out at an optional time at the audience side. In the memory means 30, various data such as program information, relative information, renewal information, user information, programs, images and sounds. The renewal information means 31 is for maintaining various renewal matters such as the time change and the content change of a program to the memory means 30, and sending them to the memory means 30. The program image selection means 22 is for selecting and outputting a program image, that is, image and sound data to the memory means 30. The time measurement means 20 is for controlling with time the operation of the program image means 22. The memory means 30 is memory means like as the program information storage means 1 in the above storage means embodiment, and stores more kinds

of data than that program information storage means 1.

The operation of the system for processing program information according to the thirteenth embodiment having this construction will be described. Figs. 30 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the thirteenth embodiment. In this thirteenth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 30A. At the position adjacent to the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 30A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105. The indication of " NOW!>" given to the time axis represents the present time zone.

Here, if the audience inputs a predetermined program (in the example of Fig. 30A, Nihon Television in the time zone of 6 o'clock is selected) in the above program table 101 through the attribute input means 2, after the server side transmission and reception means 28

receives information of the selected program, the program information retrieval/classification means 3 performs the retrieval as to the memory means 30 to read out program information or relative information to the program. These read-out data of program information or the like are sent from the program information retrieval/classification means 3 to the transmission and reception means 28 to transmit them from the transmission and reception means 28 to the user side terminal. The transmitted data is received by the transmission and reception means 26 to be displayed on the program table display means 4.

As another operation, the transmission operation of the program image is shown. By the above attribute input, a program before the time indicated by the present time " NOW!>" is input as the attribute. In such a case, programs that had been on the air are recorded and, a favorite program is selected, images of the program can be looked. In this case, the set of the time measurement means 20 and the program image selection means 22 is constituted by a video device, which records all programs on the air and stores the data in the memory means 30. If a program that had already been on the air is selected through the attribute input means as described above, the program information is transmitted and received through the transmission and reception means 26 and 28, and image

data of the corresponding program are retrieved from the memory means 30 through the program information retrieval/classification means 3 to transmit them back. On the reception side, an image picture 128 is displayed on the program image display means 23 as shown in Fig. 30B.

As still another operation, as described in the above eleventh embodiment, if the program meeting the time indicated by the present time " NOW!>" is input as the attribute through the attribute input means 2, because the program is on the air at present, the program image selection means 22 operates to select the image and sound of the program and instruct the memory means 30. By this manner, the corresponding image and sound (program image) are read out from the memory means 30 and sent through the program information retrieval/classification means 3 to the transmission and reception means 28 to be transmitted to the reception side. On the reception side, the image picture 128 of the program is displayed on the program image display means 23 by the similar manner to Fig. 30B. By this manner, a program forgotten to reserve for recording or a program that had ended can be viewed at any time.

14th Embodiment

Fig. 31 is a block diagram showing the construction of the fourteenth embodiment of a system for

processing program information according to the present invention. In Fig. 31, the reference 26 denotes transmission and reception means for transmitting and receiving program information and a program image. To this transmission and reception means 26, attribute input means 2, image sequence input means 32, and program table display means 4 are connected to constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information retrieval/classification means 3 and image sequence registration means 33 are connected. Memory means 30 and image sequence storage means 34 are connected to the program information retrieval/classification means 3. The program information retrieval/classification means 3, the transmission and reception means 28, the memory means 30, the image sequence registration means 33, and the image sequence storage means 34 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information

retrieval conditions or the like by the audience. The image sequence input means 32 is means for inputting an image sequence made by the user and those input data are transmitted through the transmission and reception means 26 and 28 to the server side terminal. The program table display means 4 receives program table data from the transmission and reception means 26 and display them, respectively.

In the server side terminal, the program information retrieval/classification means 3 retrieves and classifies various data stored in the memory means 30 and the image sequence storage means 34 and sends the result to the transmission and reception means 28. The image sequence storage means 34 stores the image sequence received from the user side terminal and sends the image sequence data to the program information retrieval/classification means 3. The image sequence registration means 33 is for sending the image sequence transmitted from the user side terminal and received by the transmission and reception means 28 and registering it.

The operation of the system for processing program information according to the fourteenth embodiment having this construction will be described. Figs. 32 are diagrams for illustrating the display operation of the program table in the system for processing program

information according to the fourteenth embodiment. In this fourteenth embodiment, at first, a program table 131 in the condition that a station name is added to the basic program table is two-dimensionally displayed on the program table display means 4 as shown in Fig. 32A. This program table 131 has an extra user channel 132 in addition to the existing channels. At the position adjacent to the program table 131 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 32A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105.

The image sequence made by the user is input by the image sequence input means 32 in the user side terminal and the data is sent to the transmission and reception means 26. The transmission and reception means 26 transmits them to the server side terminal. In the server side terminal, the transmission and reception means 28 receives the transmitted data of the image sequence to send those data to the image sequence registration means 33. The image sequence registration means 33 sends the

image sequence transmitted from the user side terminal and received by the transmission and reception means 28, to the image sequence storage means 34 and registers it. The registered image sequence is stored in the image sequence storage means 34.

Here, if the audience inputs a predetermined program (in the example of Fig. 32A, the user channel 132 in the time zone of 6 o'clock is selected) in the user channel 132 in the above program table 131 through the attribute input means 2, after the server side transmission and reception means 28 receives information of the selected program, the program information retrieval/classification means 3 performs the retrieval as to the memory means 30 and the image sequence storage means 34. Because the designated piece of program information is stored in the image sequence storage means 34, the program information retrieval/classification means 3 reads out the corresponding data from the image sequence storage means 34. These read-out image sequence data are sent from the program information retrieval/classification means 3 to the transmission and reception means 28 to transmit them from the transmission and reception means 28 to the user side terminal. An image sequence picture 133 that is the transmitted data is received by the transmission and reception means 26 and displayed on the

program table display means 4 as shown in Fig. 32B.

15th Embodiment

Fig. 33 is a block diagram showing the construction of the fifteenth embodiment of a system for processing program information according to the present invention. In Fig. 33, the reference 26 denotes transmission and reception means for transmitting and receiving program information and a program image. To this transmission and reception means 26, attribute input means 2 and program table display means 4 are connected to constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information retrieval/classification means 3 is connected. Memory means 30 and selected program information registration means 35 are connected to the program information retrieval/classification means 3. Selected program information storage means 36 is connected to the selected program information registration means 35. Furthermore, to this selected program information storage means 36, selected program information calculation means

37 is connected. The program information retrieval/classification means 3, the transmission and reception means 28, the memory means 30, the selected program information registration means 35, the selected program information storage means 36, and the selected program information calculation means 37 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The program table display means 4 receives program table data from the transmission and reception means 26 and display them, respectively.

In the server side terminal, the program information retrieval/classification means 3 retrieves and classifies various data stored in the memory means 30 and sends the result to the transmission and reception means 28. The selected program information registration means 35 is for sending information of the program selected by the user to the selected program information storage means 36 and registering it. The selected program information storage means 36 stores selected program information received from the user side terminal and sends the selected program information to the selected program information calculation means 37. The selected program

information calculation means 37 is for calculating the number of people viewing the same program and the audience rating in relation to program information selected by the user and sending the result to the program information retrieval/classification means 3.

The operation of the system for processing program information according to the fifteenth embodiment having this construction will be described. The description of the operation in this fifteenth embodiment is almost the same as the above description by using Fig. 3 or Fig. 21. For instance, in view of Fig. 21, at first, in Fig. 21A, the program table by day of week in relation to the prime time (8 o'clock to 10 o'clock), that is, the program table 108 in which the time slots only in the prime time (8 o'clock to 10 o'clock) are arranged along the vertical axis 102 and the days of week (Monday, Tuesday, Wednesday, ...) are arranged along the horizontal axis 103, is displayed on the program table display means 4. At the position adjacent to the program table 108 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 21A, "time" representing the time slot is displayed in the present attribute display column 104 and

"CH" representing the channel is displayed in the present attribute display column 105. Another display may be performed in the picture.

Selected program information made by the user is input through the attribute input means 2 in the user side terminal and the data is sent to the transmission and reception means 26. The transmission and reception means 26 transmits them to the server side terminal. In the server side terminal, the transmission and reception means 28 receives the transmitted data of selected program information and sends the data to the selected program information registration means 35. The selected program information registration means 35 sends selected program information transmitted from the user side terminal and received by the transmission and reception means 28, to the selected program information storage means 36 and registers it. Selected program information registered is stored in the selected program information storage means 36.

Here, if the audience inputs a predetermined program in the above program table 108 through the attribute input means 2, after the server side transmission and reception means 28 receives the selected program, the program information retrieval/classification means 3 sends the program to the selected program

information registration means 35 and performs the retrieval as to the memory means 30 to read out program information or relative information to the program. On the other hand, the selected program information registration means 35 which received selected program information from the program information retrieval/classification means 3 sends the data to the selected program information storage means 36. The selected program information calculation means 37 calculates the number of people viewing the same program and the audience rating as to the program on the basis of the data renewal in the selected program information storage means 36 and sends the result to the program information retrieval/classification means 3. The program information retrieval/classification means 3 sends the data of program information or the like read out from the memory means 30 and the calculation result sent from the selected program information calculation means 37 to the transmission and reception means 28 together and they are transmitted from the transmission and reception means 28 to the user side terminal. The selected program information picture that is the transmitted data is received by the transmission and reception means 26 and displayed on the program table display means 4 in the manner as shown in Fig. 4B or in the manner as shown in

Fig. 21B.

16th Embodiment

Fig. 34 is a block diagram showing the construction of the sixteenth embodiment of a system for processing program information according to the present invention. In Fig. 34, the reference 26 denotes transmission and reception means for transmitting and receiving program information. To this transmission and reception means 26, storage means 38 for program information including a program retrieval index is connected. To this storage means 38 for program information including a program retrieval index, program information retrieval/classification means 3 is connected. Attribute input means 2 and program table display means 4 are connected to the program information retrieval/classification means 3. Those functional parts constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, storage means 39 for program information including a program retrieval index is connected. Generation means 41 for program

information including a program retrieval index is connected to the storage means 39 for program information including a program retrieval index. In Fig. 34, the reference 40 denotes program retrieval index storage means 40. To this program retrieval index storage means 40, program retrieval index generation means 42. Furthermore, to this program retrieval index generation means 42, program information storage means 1 is connected. The program information storage means 1, the transmission and reception means 28, the storage means 39 for program information including a program retrieval index, the generation means 41 for program information including a program retrieval index, the program retrieval index storage means 40, and the program retrieval index generation means 42 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The program information retrieval/classification means 3 is for retrieving and classifying program information including a program retrieval index stored in the storage means 38 for program information including a program retrieval index. The program table display means 4 receives the program table data from the program information retrieval/classification means 3 to display

them.

In the server side terminal, the storage means 39 for program information including a program retrieval index is for storing program information including a program retrieval index generated on the server side. The generation means 41 for program information including a program retrieval index is for generating program information including a program retrieval index by adding an index for the program retrieval to program information sent from the program information storage means 1. The program retrieval index storage means 40 is for storing the data relative to the index to be added to program information. The program retrieval index generation means 42 is for generating the data relative to the index to be added to program information.

The operation of the system for processing program information according to the sixteenth embodiment having this construction will be described. In this sixteenth embodiment, on the server side, program information stored in the program information storage means 1 is received by the program retrieval index generation means 42 and the index for the program retrieval is generated based on the above program information and the generated program retrieval index is sent to the program retrieval index storage means 40 to be

stored. The data from the program information storage means 1 and the data from the program retrieval index storage means 40 are sent to the generation means 41 for program information including a program retrieval index to generate program information including a program retrieval index.

Program information including a program retrieval index generated on the server side is sent from the storage means 39 for program information including a program retrieval index to the transmission and reception means 28 and transmitted from the transmission and reception means 28 to the user side terminal. In the user side terminal, the transmission and reception means 26 receives the transmitted data of the above program information including a program retrieval index and those data are stored in the storage means 38 for program information including a program retrieval index.

In the program information retrieval operation based on the program table, if the audience inputs a program retrieval index as to a predetermined program in the program table (it can be the program table 101 used in the above embodiments) through the attribute input means 2, the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for program information including a program retrieval index to

read out program information. The read-out program information is sent to the program table display means 4 to be displayed there.

17th Embodiment

Fig. 35 is a block diagram showing the construction of the seventeenth embodiment of a system for processing program information according to the present invention. In Fig. 35, the reference 26 denotes transmission and reception means for transmitting and receiving program information. To this transmission and reception means 26, storage means 38 for program information including a program retrieval index is connected. To this storage means 38 for program information including a program retrieval index, program information retrieval/classification means 3 and user attribute adaptation means 43 are connected. Attribute input means 2, program table display means 4 and the user attribute adaptation means 43 are connected to the program information retrieval/classification means 3. User attribute storage means 44 is connected to the attribute input means 2. This user attribute storage means 44 is connected so that data can be sent to and received from the user attribute adaptation means 43. Those functional parts constitute a user side terminal. Reference 28 denotes transmission and reception means disposed

correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, storage means 39 for program information including a program retrieval index is connected. Generation means 41 for program information including a program retrieval index is connected to the storage means 39 for program information including a program retrieval index. In Fig. 35, the reference 40 denotes program retrieval index storage means 40. To this program retrieval index storage means 40, program retrieval index generation means 42. Furthermore, to this program retrieval index generation means 42, program information storage means 1 is connected. The program information storage means 1, the transmission and reception means 28, the storage means 39 for program information including a program retrieval index, the generation means 41 for program information including a program retrieval index, the program retrieval index storage means 40, and the program retrieval index generation means 42 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The

program information retrieval/classification means 3 is for retrieving and classifying program information including a program retrieval index stored in the storage means 38 for program information including a program retrieval index. The program table display means 4 receives the program table data from the program information retrieval/classification means 3 to display them. The user attribute storage means 44 is for maintaining the data relative to the user attribute in the user side terminal. The user attribute adaptation means is for examining whether the user attribute is adaptable or not upon the retrieval of program information.

In the server side terminal, the storage means 39 for program information including a program retrieval index is for storing program information including a program retrieval index generated on the server side. The generation means 41 for program information including a program retrieval index is for generating program information including a program retrieval index by adding an index for the program retrieval to program information sent from the program information storage means 1. The program retrieval index storage means 40 is for storing the data relative to the index to be added to program information. The program retrieval index generation means 42 is for generating the data relative to the index to be

added to program information.

The operation of the system for processing program information according to the seventeenth embodiment having this construction will be described. In this seventeenth embodiment, on the server side, program information stored in the program information storage means 1 is received by the program retrieval index generation means 42 and the index for the program retrieval is generated based on the above program information and the generated program retrieval index is sent to the program retrieval index storage means 40 to be stored. The data from the program information storage means 1 and the data from the program retrieval index storage means 40 are sent to the generation means 41 for program information including a program retrieval index to generate program information including a program retrieval index.

Program information including a program retrieval index generated on the server side is sent from the storage means 39 for program information including a program retrieval index to the transmission and reception means 28 and transmitted from the transmission and reception means 28 to the user side terminal. In the user side terminal, the transmission and reception means 26 receives the transmitted data of the above program

information including a program retrieval index and those data are stored in the storage means 38 for program information including a program retrieval index.

In the program information retrieval operation based on the program table, if the audience inputs a program retrieval index as to a predetermined program in the program table (it can be the program table 101 used in the above embodiments) through the attribute input means 2, the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for program information including a program retrieval index. At this time, the user attribute adaptation means 43 receives the user attribute data from the user attribute storage means 44 to examine whether the program subjected to the retrieval adapts to the user attribute or not. If the user attribute is adaptable, program information is read out. The read-out program information is sent to the program table display means 4 to be displayed there. On the other hand, if the user attribute is not adaptable, program information is not read out and the program information is not displayed on the program table display means 4.

18th Embodiment

Fig. 36 is a block diagram showing the construction of the eighteenth embodiment of a system for

processing program information according to the present invention. In Fig. 36, the reference 26 denotes transmission and reception means for transmitting and receiving program information. To this transmission and reception means 26, storage means 38 for program information including a program retrieval index is connected. To this storage means 38 for program information including a program retrieval index, program information retrieval/classification means 3 is connected. Attribute input means 2, and program table display means 4 are connected to the program information retrieval/classification means 3. Those functional parts constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information retrieval/classification means 45. To this program information retrieval/classification means 45, storage means 39 for program information including a program retrieval index is connected. Generation means 41 for program information including a program retrieval index is connected to the storage means 39 for program

information including a program retrieval index. In Fig. 36, the reference 40 denotes program retrieval index storage means 40. To this program retrieval index storage means 40, program retrieval index generation means 42. Furthermore, to this program retrieval index generation means 42, program information storage means 1 is connected. The program information storage means 1, the transmission and reception means 28, the storage means 39 for program information including a program retrieval index, the generation means 41 for program information including a program retrieval index, the program retrieval index storage means 40, the program retrieval index generation means 42, and the program information retrieval/classification means 45 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The program information retrieval/classification means 3 is for retrieving and classifying program information including a program retrieval index stored in the storage means 38 for program information including a program retrieval index. The program table display means 4 receives the program table data from the program information retrieval/classification means 3 to display

them.

In the server side terminal, the storage means 39 for program information including a program retrieval index is for storing program information including a program retrieval index generated on the server side. The generation means 41 for program information including a program retrieval index is for generating program information including a program retrieval index by adding an index for the program retrieval to program information sent from the program information storage means 1. The program retrieval index storage means 40 is for storing the data relative to the index to be added to program information. The program retrieval index generation means 42 is for generating the data relative to the index to be added to program information. The program information retrieval/classification means 45 is for retrieving program information including a program retrieval index stored in the storage means 39 for program information including a program retrieval index.

The operation of the system for processing program information according to the eighteenth embodiment having this construction will be described. In this eighteenth embodiment, on the server side, program information stored in the program information storage means 1 is received by the program retrieval index

generation means 42 and the index for the program retrieval is generated based on the above program information and the generated program retrieval index is sent to the program retrieval index storage means 40 to be stored. The data from the program information storage means 1 and the data from the program retrieval index storage means 40 are sent to the generation means 41 for program information including a program retrieval index to generate program information including a program retrieval index.

Program information including a program retrieval index generated on the server side is sent from the storage means 39 for program information including a program retrieval index to the transmission and reception means 28 and transmitted from the transmission and reception means 28 to the user side terminal. In the user side terminal, the transmission and reception means 26 receives the transmitted data of the above program information including a program retrieval index and those data are stored in the storage means 38 for program information including a program retrieval index.

In the program information retrieval operation based on the program table, if the audience inputs a program retrieval index as to a predetermined program in the program table (it can be the program table 101 used in

the above embodiments) through the attribute input means 2, the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for program information including a program retrieval index to read out program information. The read-out program information is sent to the program table display means 4 to be displayed there. However, if, in the user side terminal, the corresponding program information is not retrieved even when the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for program information including a program retrieval index, the retrieval of program information is performed in the server side terminal. In this case, the attribute data input in the user side terminal are sent from the program information retrieval/classification means 3 to the transmission and reception means 26, and after that, transmitted from the transmission and reception means 26 to the server side terminal. This attribute data are sent to the program information retrieval/classification means 45 in the server side terminal. The program information retrieval/classification means 45 on the server side performs the retrieval in the storage means 39 for program information including a program retrieval index and if there is program information, it is read out. The read-

out program information is transmitted from the transmission and reception means 28 to the user side terminal and sent to the program table display means 4 in the audience terminal to be displayed there. By this manner, even if the retrieval of program information including a program retrieval index ended in failure in the user side terminal, the similar program information retrieval can be performed in the server side terminal so the certainty of the operation increases.

19th Embodiment

Fig. 37 is a block diagram showing the construction of the nineteenth embodiment of a system for processing program information according to the present invention. In Fig. 37, the reference 26 denotes transmission and reception means for transmitting and receiving program information. To this transmission and reception means 26, storage means 38 for program information including a program retrieval index is connected. To this storage means 38 for program information including a program retrieval index, program information retrieval/classification means 3 and user attribute adaptation means 43 are connected. Attribute input means 2, program table display means 4 and the user attribute adaptation means 43 are connected to the program information retrieval/classification means 3. User

attribute storage means 44 is connected to the attribute input means 2. This user attribute storage means 44 is connected so that data can be sent to and received from the user attribute adaptation means 43. Those functional parts constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information retrieval/classification means 45. To this program information retrieval/classification means 45, storage means 39 for program information including a program retrieval index is connected. Generation means 41 for program information including a program retrieval index is connected to the storage means 39 for program information including a program retrieval index. In Fig. 37, the reference 40 denotes program retrieval index storage means 40. To this program retrieval index storage means 40, program retrieval index generation means 42. Furthermore, to this program retrieval index generation means 42, program information storage means 1 is connected. The program information storage means 1, the transmission and reception means 28, the storage means 39 for program

information including a program retrieval index, the generation means 41 for program information including a program retrieval index, the program retrieval index storage means 40, the program retrieval index generation means 42, and the program information retrieval/classification means 45 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The program information retrieval/classification means 3 is for retrieving and classifying program information including a program retrieval index stored in the storage means 38 for program information including a program retrieval index. The program table display means 4 receives the program table data from the program information retrieval/classification means 3 to display them. The user attribute storage means 44 is for maintaining the data relative to the user attribute in the user side terminal. The user attribute adaptation means is for examining whether the user attribute is adaptable or not upon the retrieval of program information.

In the server side terminal, the storage means 39 for program information including a program retrieval index is for storing program information including a

program retrieval index generated on the server side. The generation means 41 for program information including a program retrieval index is for generating program information including a program retrieval index by adding an index for the program retrieval to program information sent from the program information storage means 1. The program retrieval index storage means 40 is for storing the data relative to the index to be added to program information. The program retrieval index generation means 42 is for generating the data relative to the index to be added to program information. The program information retrieval/classification means 45 is for retrieving program information including a program retrieval index stored in the storage means 39 for program information including a program retrieval index.

The operation of the system for processing program information according to the nineteenth embodiment having this construction will be described. In this nineteenth embodiment, on the server side, program information stored in the program information storage means 1 is received by the program retrieval index generation means 42 and the index for the program retrieval is generated based on the above program information and the generated program retrieval index is sent to the program retrieval index storage means 40 to be

stored. The data from the program information storage means 1 and the data from the program retrieval index storage means 40 are sent to the generation means 41 for program information including a program retrieval index to generate program information including a program retrieval index.

Program information including a program retrieval index generated on the server side is sent from the storage means 39 for program information including a program retrieval index to the transmission and reception means 28 and transmitted from the transmission and reception means 28 to the user side terminal. In the user side terminal, the transmission and reception means 26 receives the transmitted data of the above program information including a program retrieval index and those data are stored in the storage means 38 for program information including a program retrieval index.

In the program information retrieval operation based on the program table, if the audience inputs a program retrieval index as to a predetermined program in the program table (it can be the program table 101 used in the above embodiments) through the attribute input means 2, the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for program information including a program retrieval index.

At this time, the user attribute adaptation means 43 receives the user attribute data from the user attribute storage means 44 to examine whether the program subjected to the retrieval adapts to the user attribute or not. If the user attribute is adaptable, program information is read out. The read-out program information is sent to the program table display means 4 to be displayed there. On the other hand, if the user attribute is not adaptable, program information is not read out and the program information is not displayed on the program table display means 4.

In the above retrieval operation, the different retrieval result is obtained according to the adaptation or non-adaptation of the user attribute. In the case of the adaptable user attribute, if, in the user side terminal, the corresponding program information is not retrieved even when the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for program information including a program retrieval index, the retrieval of program information is performed in the server side terminal. In this case, the attribute data input in the user side terminal are sent from the program information retrieval/classification means 3 to the transmission and reception means 26, and after that, transmitted from the

transmission and reception means 26 to the server side terminal. This attribute data are sent to the program information retrieval/classification means 45 in the server side terminal. The program information retrieval/classification means 45 on the server side performs the retrieval in the storage means 39 for program information including a program retrieval index and if there is program information, it is read out. The read-out program information is transmitted from the transmission and reception means 28 to the user side terminal and sent to the program table display means 4 in the audience terminal to be displayed there. By this manner, in addition to performing the certain retrieval in the user side terminal by examining the adaptation of the user attribute, even if the retrieval of program information including a program retrieval index ended in failure, the similar program information retrieval can be performed in the server side terminal so the certainty of the operation increases.

20th Embodiment

Fig. 38 is a block diagram showing the construction of the twentieth embodiment of a system for processing program information according to the present invention. In Fig. 38, the reference 1 denotes program information storage means for storing received program

information, 2 does attribute input means through which attribute information to be used as two-axes attributes of a program table and the others of attribute information are input, 3 does program information retrieval/classification means for retrieving or classifying a program in program information on the basis of input attribute information to make the program table, and 4 does program table display means for displaying the made program table. The reference 22 denotes program image selection means, 20 does time measurement means, 46 does program image recording means for recording a program image, 47 does program video-recording information retrieval/classification means, and 23 does program image display means for displaying the program image. The program image recording means 46 is constituted by, for instance, a video device for recording an image of the program determined by a timer control under the control of the time measurement means 20. The program image recording means 46 is also constructed to record a program image by an instruction from the program information retrieval/classification means 3. The program image selection means 22 starts the program image recording means 46 by receiving an instruction from the program information retrieval/classification means 3. The program image display means 23 displays the image of the program.

The operation of the system for processing program information according to the twentieth embodiment having this construction will be described. Figs. 39 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the twentieth embodiment. In this twentieth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 39A. At the position adjacent to the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 39A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105.

Here, if the audience selects a certain program through the attribute input means 2, the program information retrieval/classification means 3 retrieves the program as to the program image storage means 1. If the program is recorded, a play back button 135 is displayed with program information on the program information picture 134 of the program table display means 4 as shown

in Fig. 39B. If it is not recorded and if it is off the air at present, a recording reservation button 136 is displayed on the program information picture 134 of the program table display means 4. If it is on the air, a recording button 137 is displayed on the program information picture 134 of the program table display means 4. Based on the button display as described above, if the audience clicks the play back button 135, this operation information is sent through the program information retrieval/classification means 3 to the program image recording means 46 to play back the program. If the recording reservation button 136 is clicked, this operation information is sent through the program information retrieval/classification means 3 to the program image recording means 46 to reserve the program for recording. By this manner, the program image recording means 46 and the time measurement means 20 are set. Furthermore, if the recording button 137 is clicked, this operation information is sent through the program information retrieval/classification means 3 and the program image selection means 22 to the program image recording means 46 to record the program immediately. By this manner, even in the case of no time for viewing the program, or the like, it can be recorded by the manner such as the recording reservation to view the program

later.

Figs. 40 show display conditions of the program table display means 4 in the case of performing the above recording reservation operation. In these drawings, if the recording reservation button 136 is operated by clicking in the program information picture 134 shown in Fig. 40A to reserve the program for recording, a recording reservation program table 139 is made as shown in Fig. 40B. In this recording reservation program table 139, there are provided recording relation columns 138 for displaying a recording or recording reservation table. If recording reservations are performed as to plural programs, in the recording relation columns 138 of the recording complementary-angle program table 139, program information reserved for recording is displayed along the time. By this manner, it becomes easy to distinguish the program reserved for recording.

21st Embodiment

Fig. 41 is a block diagram showing the construction of the twenty-first embodiment of a system for processing program information according to the present invention. In Fig. 41, the reference 1 denotes program information storage means for storing received program information, 2 does attribute input means through which attribute information to be used as two-axes

attributes of a program table and the others of attribute information are input, 3 does program information retrieval/classification means for retrieving or classifying a program in program information on the basis of input attribute information to make the program table, and 4 does program table display means for displaying the made program table. The reference 22 denotes program image selection means, 20 does time measurement means, and 48 does viewed program information storage means. The viewed program information storage means 48 is for recording information of the program viewed by the audience. The program image selection means 22 registers data to the viewed program information storage means 48 by receiving an instruction from the program information retrieval/classification means 3.

The operation of the system for processing program information according to the twenty-first embodiment having this construction will be described. Figs. 42 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the twenty-first embodiment. In this twenty-first embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 42A. At the position adjacent to the program table

101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 42A, "time" representing the time slot is displayed in the present attribute display column 104, "CH" representing the channel is displayed in the present attribute display column 105, and "day of week" as the other attribute information is displayed in the change attribute display column 107. At the position (adjacent to the right side) adjacent to the above program table 101, there is displayed an operation button 140 for calling "program having ever been viewed".

Here, if the audience clicks the above operation button 140, on the program table display means 4, as shown in Fig. 42B, there is displayed a program table 141 in which the program information display columns 109 corresponding to the programs having ever been viewed are different in color from the other programs. If the audience selects a certain program through the attribute input means 2, the program information retrieval/classification means 3 retrieves the program as to the program image storage means 1 to display the program information on the program table display means 4. By this manner, the programs having ever been viewed

become clear at a glance in the program table 141 and this can be utilized for selecting the program wanted to view next.

Fig. 43 is a diagram showing the user classification program table 120 (already described with reference to Fig. 17) when the user classification operation is designated in the program table shown in Fig. 42A, and the construction of the program table is basically the same as that shown in Fig. 17B. In this embodiment, by performing the click operation of the operation button 140 for calling the above "program having ever been viewed", also in this user classification program table 120, columns 142 for the programs viewed last times are added to the lowermost columns and program information of the programs viewed last times is displayed in those columns 142. By this manner, as for the programs inserted in the user classification, the distinction of programs having ever been viewed or not yet being viewed can easily be performed and this can be utilized for selecting the program wanted to view next.

22nd Embodiment

Fig. 44 is a block diagram showing the construction of the twenty-second embodiment of a system for processing program information according to the present invention. In Fig. 44, the reference 1 denotes

program information storage means for storing received program information, and 4 does program table display means for displaying the made program table. The reference 50 denotes program information classification establishment means for establishing classification information required for classifying programs, 51 does program classification information storage means for storing program classification information, and 52 does program information classification means for classifying programs in accordance with a predetermined rule. To the program classification information establishment means 50, for instance, program classification information is input by the user or established at the time of constructing the system. Program information 54 is stored in the program information storage means 1 and program classification information 55 is stored in the program classification information storage means 51. The program information classification means 52 includes adaptation degree calculation means 53 for calculating the adaptation degree of a program upon the classification operation.

The structure of program classification information 55 will be described. Program classification information 55 comprises, for instance, a set of a representative word (example: fishing) representing the meaning of the classification and a line of characteristic

words (example: FISHING, spot, fishing, Fishing) for the collation with program information. By collating these characteristic words with program information, the adaptation degree of each piece of program information with the program classification information can be calculated. For instance, the sum of the numbers of times of the appearances of the characteristic words can be used as the value of the adaptation degree. In the adaptation degree calculation means 53, by comparing this value with the threshold value of the adaptation degree established as to the program classification, the set of program information to be classified in program classification information of a certain program can be specified. In this case, as for one piece of program classification information, all pieces of program information the adaptation values of which exceed the threshold value are classified. Fig. 45 is an image diagram showing the process operation content of the classification method (or classification operation) by the adaptation degree calculation means 53. As shown in this drawing, as program classification information 55, "representative word: fishing" and "characteristic word: FISHING, secret point, fishing, Fishing, sweetfish" are established. The program information classification means 52 loads program information 1 to 3 from program information each 1 and

calculates the adaptation degrees as to respective pieces of program information. As a result, the adaptation degree of 4 is given to program information 1, the adaptation degree of 1 to program information 2, and the adaptation degree of 0 to program information 3. Therefore, the threshold value established in the program information classification means 52 and the adaptation degree of each piece of program information are compared with each other, and the result that program information 1 is classified into "fishing" and program information 2 is also classified into "fishing" but program information 3 is not classified into "fishing", is obtained. Because the classification of program information is performed by such a classification method, there is also the case that one piece of program information is classified into plural pieces of program classification information. Fig. 46 is an image diagram of the classification result of program information by the program information classification means 52. In classified program information (group) 56, program information connected by a line to the same program classification information represents that it belongs the same classification. Program information in which two or more lines are drawn from one piece of program information represents that it is classified into plural pieces of program classification information.

Program classification information itself may be predetermined for the system, or established by the user with the program classification information establishment means. They may also be mixed.

By the construction with including such program information classification means 52, program information 54 can be classified as to program classification information 55, the program table having the line of established program classification information as one axis of the program table can be made and displayed on the program table display means 4. On the other axis of the program table, the order of the adaptation degrees as to respective pieces of program classification information may be shown, or by showing the line of other pieces of program classification information, the accuracy of the program can be grasped from plural points of view, and it can be grasped more accurately.

In any form of the program table, among the programs displayed therein, it becomes possible separately to display only those classified into a certain piece of program classification information.

23rd Embodiment

Fig. 47 is a block diagram showing the construction of the twenty-third embodiment of a system for processing program information according to the

present invention. The program information processing according to this embodiment has the construction that program classification information extraction means 57 and program classification information generation means 58 are provided in place of the program classification information establishment means 50 of the system for processing program information according to the above twenty-second embodiment. The program classification information generation means 58 includes relative key word extraction means 59. The other construction is the same as the above twenty-second embodiment and includes program information storage means 1, program table display means 4 for displaying the program table, program classification information storage means 51, program information classification means 52, and adaptation degree calculation means 53. The program classification information extraction means 57 obtains program information from the program information storage means 1 and extracts data to be program classification information from this program information. The program classification information generation means 58 extracts a characteristic word or the like to be program classification information by the relative key word extraction means 59 to make program classification information. In this manner, in this embodiment, the system for processing program information

itself can generate program classification information in a self-complete manner.

In the operation of this twenty-third embodiment, a specified set of program information in program information stored in the program information storage means 1, for instance, "program liked by a certain person" or the like is designated. A characteristic word is extracted from the designated set of program information by the relative key word extraction means 59, and by establishing an appropriate representative word by the user, program classification information can be generated. There are various methods for the practical equipment of the relative key word extraction means 59.

By including such program classification information extraction means 57 and program classification information generation means 58, a new piece of program classification information can easily be defined by user by designating a proper program group by the user so the trouble of designating a characteristic word can be omitted. Because the characteristic word is extracted from real program information, there is also the advantage that it is easy to obtain program classification information capable of classifying the program more accurately.

24th Embodiment

Fig. 48 is a block diagram showing the construction of the twenty-fourth embodiment of a system for processing program information according to the present invention. In Fig. 48, the reference 26 denotes transmission and reception means for transmitting and receiving program information and program classification information. To this transmission and reception means 26, program classification information storage means 51 and program table display means 4 are connected to constitute a reception side terminal (that is, a user side terminal). 28 does transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and program classification information to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information classification means 52 is connected. Program information storage means 1 is connected to the program information classification means 52. The program information storage means 1 and the program information classification means 52 constitute a server side terminal.

Because of having this construction, the system for processing program information that includes the program information classification means 52 according to

this embodiment and is constructed to classify program information, can be used in the surroundings that the server and the user terminal cooperate with each other. In this case, program classification information is transmitted from the user side terminal to the server side terminal. Program classification information to be transmitted may be any of those predetermined in the system, established by the user, and extracted from the program information group designated by the user.

The server side terminal that received program classification information classifies the program information groups stored in the program information storage means 1 in accordance with those pieces of program classification information. By transmitting only program information classified into program classification information transmitted from the user side terminal, to the user side terminal to be displayed on the program table display means 4 in the user side terminal, in comparison with the case that all program tables are transmitted, the data quantity to be transmitted can remarkably be decreased.

As described above, according to the present invention, because the system for processing program information is constructed to include the program information storage means for storing program information,

and the program table display means for two-dimensionally displaying the program table following two axes in accordance with two attributes among attributes given to each piece of program information, to make the program table for two-dimensionally displaying the programs with two axes of free attributes, for the audience, the program tables of various constructions can be displayed on the display means at will and in respective program retrieval operations, the program table easy to look for the program can be obtained. The effect that the objective program can be found in a short time by coming up with ideas for the extraction of the program or the like, and the effect of being useful for making the broadcast view plan of himself are obtained.

While the preferred embodiments of the present invention have been described in the above, various variations and modifications may be made without departing from the scope of the invention claimed hereinbelow.

Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

The reference to any prior art in this specification is not, and should not be taken as, an acknowledgment or any form of suggestion that that prior art forms part of the common general knowledge in Australia.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A system for processing television broadcasting program information, comprising:

a program information storage means for storing television broadcasting program information;

attribute inputting means for receiving a user's designation of two kinds of attributes among three or more kinds of attributes of said broadcasting program information;

program information retrieving means for extracting a set of program information corresponding to input attributes, said program information retrieving means including program-table-making means for making a program table using said extracted set of program information; and

program table display means responsive to said program information retrieving means for two-dimensionally displaying said set of program information in a two-axis program table wherein said two axes of the program table correspond to said two kinds of attributes designated by the user through said attribute inputting means, said two-axis program table including a plurality of cells arranged in a matrix in which each of said cells correspond to each program.

2. The system for processing television broadcasting program information as claimed in claim 1, wherein said program information retrieving means comprises means for classifying said program information.

3. A system for processing program information as claimed in claim 1, wherein a further attribute is selected or added to the two axis attributes of the program table to modify the program information display in the program table.

4. A system for processing program information as claimed in claim 1, wherein the system is arranged to display only a selected part of a the set of program information in the two-axis program table.

5. A system for processing program information as claimed in claim 4, wherein the system is arranged to redisplay the entire set of program information in the program table.

6. A system for processing program information as claimed in claim 1, wherein an attribute relevant to a program can be selected to modify the displayed program table.

7. A system for processing program information as claimed in claim 1, wherein a new attribute can be added to and an attribute can be deleted from the program table in accordance with an attribute selection by a user or an input from another system.

8. A system for processing program information as claimed in claim 1, wherein information registered by a user can be designated as an attribute of the program table.

9. A system for processing program information as claimed in claim 1, wherein, when a plurality of programs are present in a same time zone, they can be used for a program check of the same time zone without expanding the display area by displaying them one upon another as they are shifted rearward little by little, and displaying them at the front one by one.

10. A system for processing program information as claimed in claim 1, wherein three axis attributes of the program table are selected by a user to display program information as a three-dimensional shape.

11. A system for processing program information as claimed in claim 1, wherein attribute structure including elements constituting each of said attributes of the program table can be extracted from program information stored in the program information storage means.

12. A system for processing program information as claimed in claim 1, wherein a program outline pictures or sounds of a program can be stored for redisplay and play back.

13. A system for processing program information as claimed in claim 1, wherein the system is arranged to enable a user to select a channel or a program as an attribute of the program table, and to respond to the selection by changing the channel to display the picture of the selected program and program-related information if the program is on the air at present, and to display only information relative to the program if the program is off the air.

14 A system for processing program information as claimed in claim 1, wherein when a channel is selected as an attribute of the program table, advertisements and program-related information are displayed in accordance with a time schedule of programs in the selected channel.

15. A system for processing program information as claimed in claim 1, wherein program information, program-related information, program information renewal information, information registered by a user, a program, a picture, or a sound can be transmitted and received by the system.

16. A system for processing program information as claimed in claim 1, wherein an image sequence made by a user can be transmitted and received by the system to be displayed in a portion of the program table.

17. A system for processing program information as claimed in claim 1, wherein program information selected by a user is transmitted and the number of people viewing the same program is calculated to display the result in a portion of the program table as an audience rating or the number of audience.

18. A system for processing television broadcasting program information, comprising:

(i) a transmitter side including:

program information storage means for storing television broadcasting program information;

program index generating means responsive to said program information stored in said program information storage means for generating a program index;

program index storage means responsive to said program index generated by said program index generating means;

program-information-with-program-index generating means for generating program information with a program index and responsive to both said program information and said program index which are respectively stored in said program information storage means and said program index storage means;

first program-information-with-program-index storage means responsive to said program information with program index generated by said program-information-with-program-index generating means for storing said program information with program index

first program information retrieving means for extracting a set of program information from said program information with program index fed from said first-program-information-with-program-index storage means, said program information retrieving means including first

program-table-making means for making a first program table using said set of program information extracted; and

first transmitting and receiving means for transmitting said set of program information fed from said program information retrieving means; and

(ii) a receiver side including:

second transmitting and receiving means for communicating with said first transmitting-and-receiving means;

second program-information-with-program-index storage means responsive to output data from said second transmitting and receiving means for storing said program information with program index sent from said transmitter side;

attribute inputting means for receiving user's designation of two kinds of attributes among three or more kinds of attributes constituting of said broadcasting program information;

second program information retrieving means for extracting a set of program information corresponding to input attributes from said program information with program index fed from said second program information with program index storage means, said second program information retrieving means including second-program-table-making means for making a second program table using said set of program information extracted; and

program table display means responsive to said second program information retrieving means for two-dimensionally displaying said first or second program table, as said set of program information in the form of a two-axis program table wherein said two axes correspond to said two kinds of attributes designated through said attribute input means, said two-axis program table

including a plurality of cells arranged in a matrix in which each of said cells correspond to each program;

said second program information retrieving means being arranged to send an instruction via said second and first transmitting and receiving means to said transmitter side when a desired program information with program index corresponding to input attributes does not exit in said second program-information-with-program-index storage means, said instruction being sent to said first program information retrieving means so that a set of program information corresponding to attributes input by said attribute input means is extracted to be sent to said receiver side.

19. A system for processing program information as claimed in claim 18, wherein a user attribute is maintained at the receiver side to retrieve program information including an index for retrieving a program, on the basis of the user attribute.

20. A system for processing program information as claimed in claim 19, wherein, when a retrieval of program information including an index for retrieving a program is unsuccessful at the receiver side, a retrieval and an automatic classification are carried out at the transmitter side and the result is transmitted to the receiver side.

21. A system for processing program information as claimed in claim 19, wherein, when a retrieval of program information including an index for retrieving a program is unsuccessful at the receiver side, a retrieval and an automatic classification according to the user attribute are carried out at the transmitter side and the result is transmitted to the receiver side.

22. A system for processing program information as claimed in claim 1, wherein a designated program can be recorded, reserved for recording, or played back in accordance with a designation of a user or an input from another system.

23. A system for processing information as claimed in claim 1, wherein programs recorded or reserved for recording can be displayed along a time axis of the program table.

24. A system for processing program information as claimed in claim 1, wherein a recorder is provided for recording information of the program viewed by a user, and a relationship between the program information and each program is examined and an assessment is made about whether or not to display the program, the assessment being based on the relationship.

25. A system for processing program information as claimed in claim 1, wherein the system is arranged to show whether a performer of the program appears on a certain day or not.

26. A system for processing program information as claimed in claim 1, wherein the system includes program classification information and a fitting degree calculation means for calculating a fitting degree between program information and each piece of program classification information, the system further including program classification means in which, to one given piece of program classification information and a program information set, a fitting degree of each piece of program information in the program information set to program classification information, is calculated by using the fitting degree calculation means to obtain a subset of the program information set having a fitting degree not less

than a given threshold value, and a line of the program classification predetermined or designated by a user is taken as one or more attributes of the program table to display it by the program table display means.

27. A system for processing program information as claimed in claim 1, wherein the system includes program classification information and a fitting degree calculation means for calculating a fitting degree between program information and each piece of program classification information, the system further including program classification means in which, to one given piece of program classification information and a program information set, a fitting degree of each piece of program information in the program information set to program classification information, is calculated by using the fitting degree calculation means to obtain a subset of the program information set having a fitting degree not less than a given threshold value, and the program table display means displays only a program classified into a program classification predetermined or designated by a user so that it can be distinguished from another program in the program table without depending on the form of the program table.

28. A system for processing program information as claimed in claim 1, further comprising program information designation means for designating a subset of a program information set stored in the program information storage means, relative key word extraction means for extracting a characteristic word set characterising a subset of the subset of program information designated by the program information designation means, and program information extraction means for extracting characteristic word information from the designated subset by using the

relative key word extraction means and extracting program classification information for discriminating and classifying program information similar to program information in the subset.

29. A system for processing program information as claimed in claim 26, wherein program classification information is transmitted from a user side terminal to a sever side terminal, program information is classified by the program classification means at the server side, and only program information classified into program classification information transmitted from the user side terminal is transmitted to the user side terminal.

30. A system for processing program information substantially as herein described with reference to the accompanying drawings.