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Lee et al.

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(54) **METHOD OF RECOMMENDING BROADCASTING CONTENTS AND RECOMMENDING APPARATUS THEREFOR**

(75) Inventors: **Hye-soo Lee**, Seoul (KR); **Hee-seon Park**, Seoul (KR); **Hyo-won Lee**, Glasnevin (IE); **Cathal Gurrin**, Glasnevin (IE); **Paul Ferguson**, Co. Cavan (IE)

(73) Assignee: **SAMSUNG ELECTRONICS CO., LTD.**, Suwon-Si (KR)

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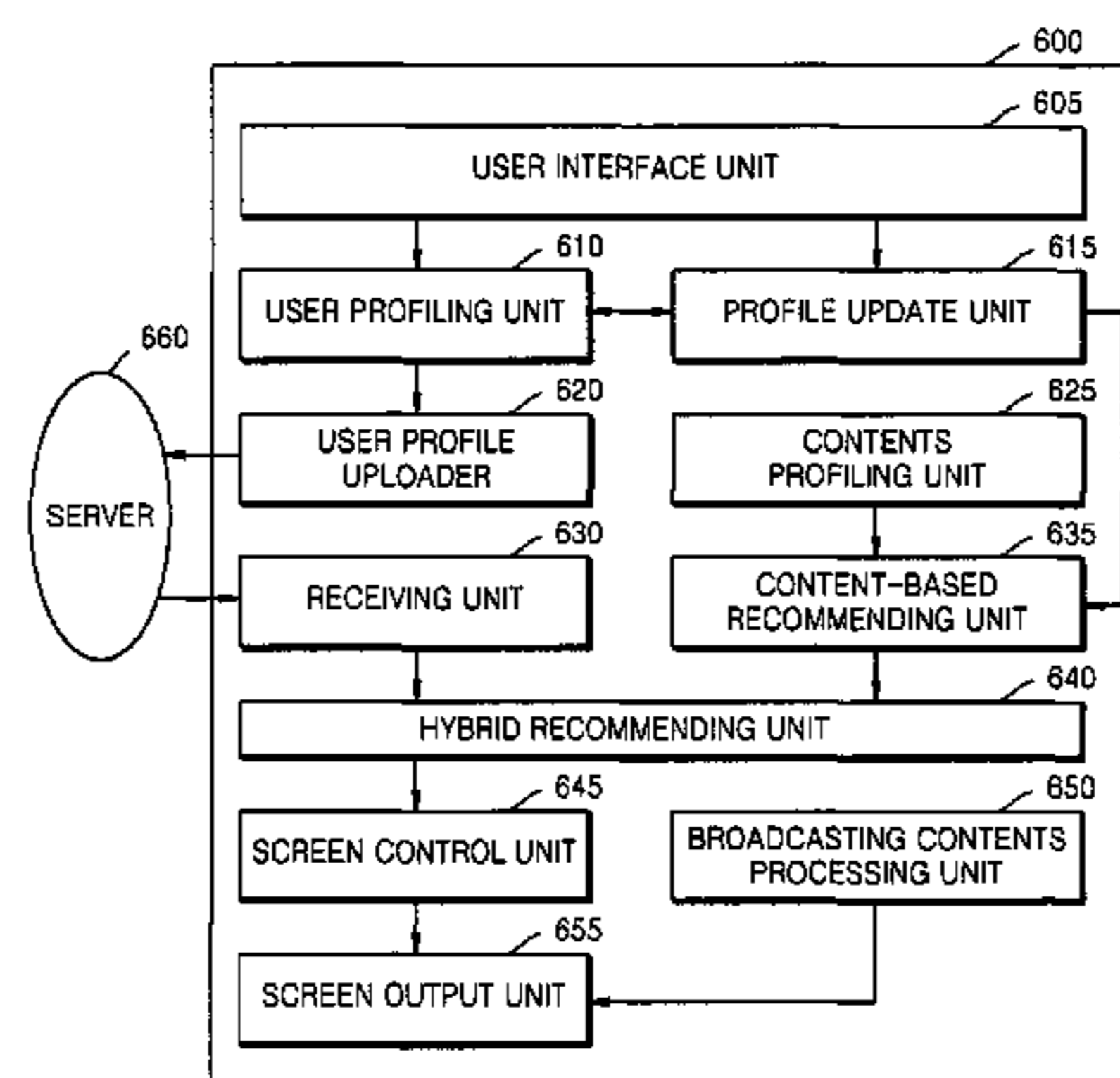
Assistant Examiner — Anthony Bantamoi

(74) *Attorney, Agent, or Firm* — Staas & Halsey LLP

(57) **ABSTRACT**

A method for recommending broadcasting contents, is performed by a multimedia contents reproducing device of a first user. The method includes the operations of logging a broadcasting contents viewing behavior pattern of the first user and generating a first user profile; transmitting the generated first user profile to an external server by using a network; receiving a recommendation result about one or more recommended broadcasting contents from the server, wherein a preference degree correlation between the first user profile and a second user profile of at least a second user registered in an account of the first user is reflected in the recommendation result; classifying the one or more recommended broadcasting contents in the received recommendation result into broadcasting timetable categories; and displaying on a screen a recommendation result about the classified one or more recommended broadcasting contents.

24 Claims, 6 Drawing Sheets



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FIG. 1

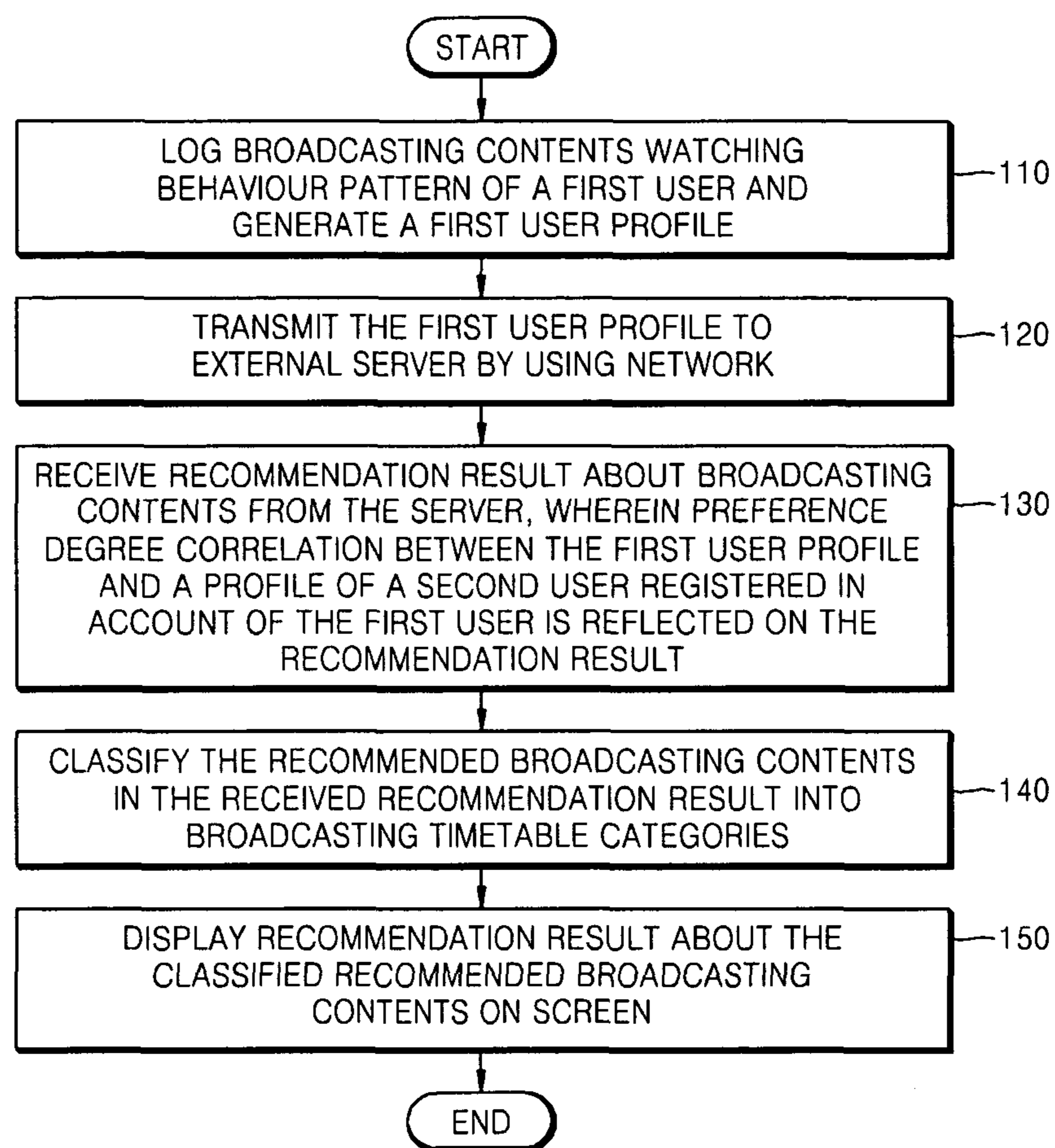


FIG. 2

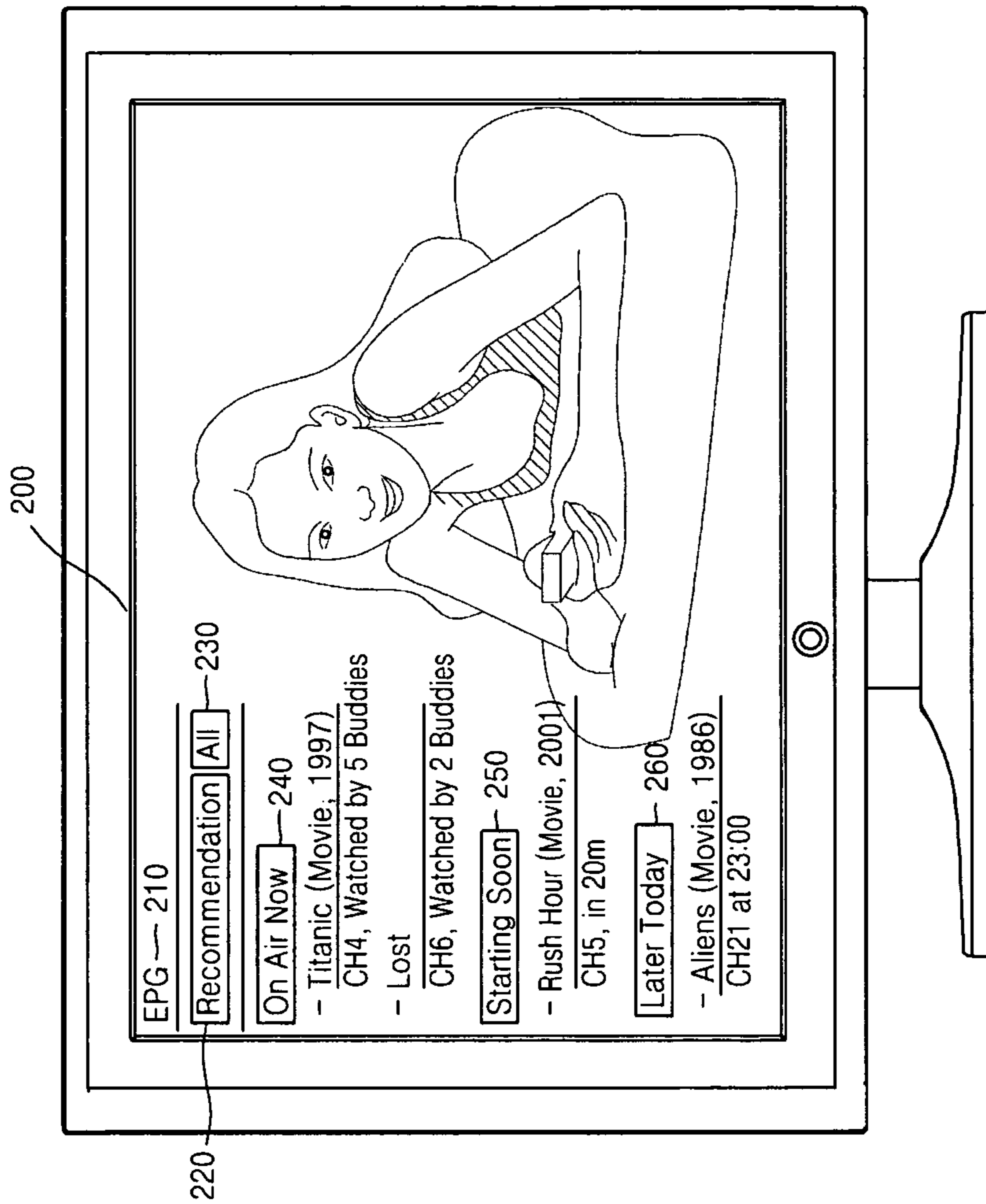


FIG. 3

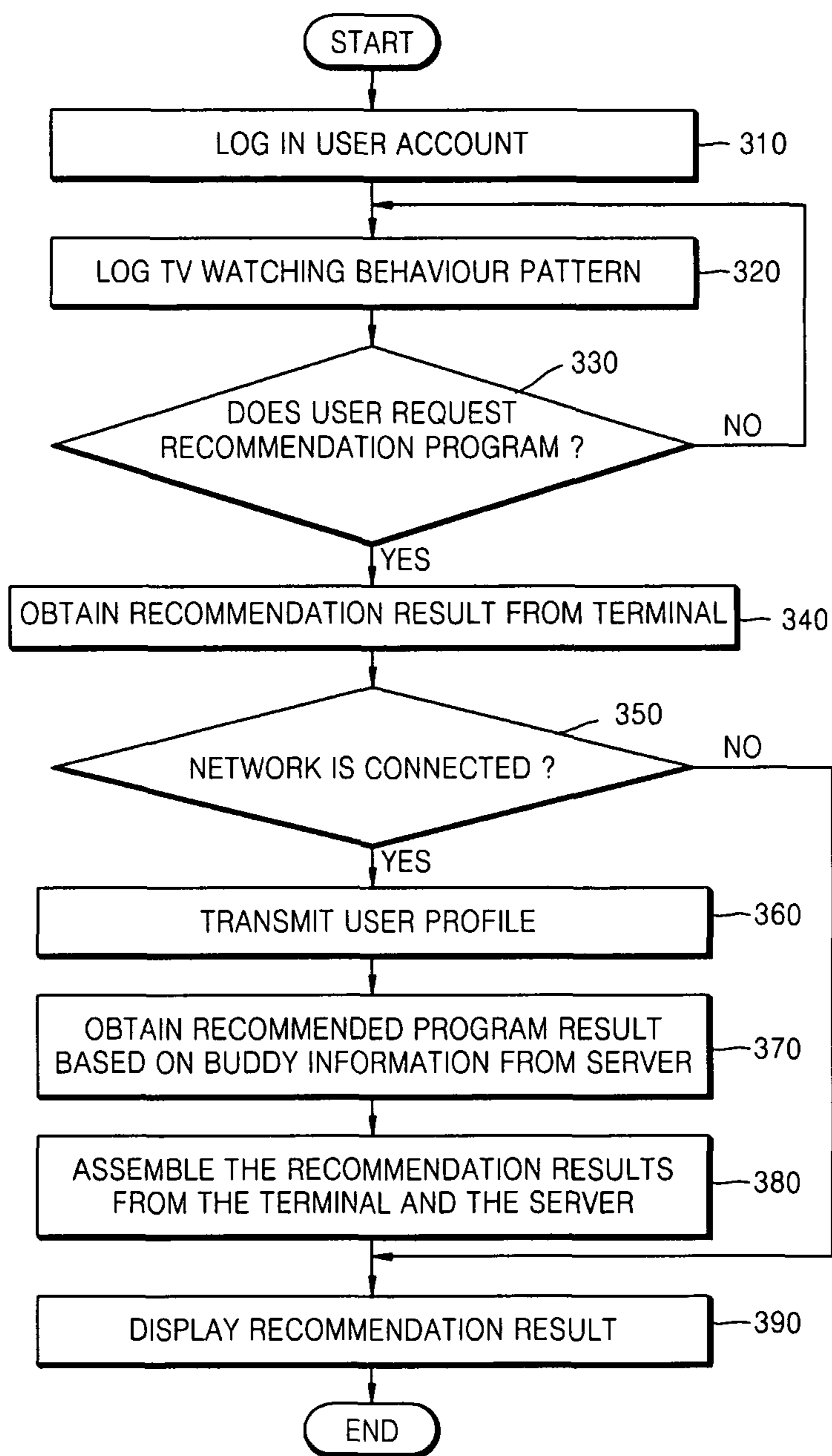


FIG. 4

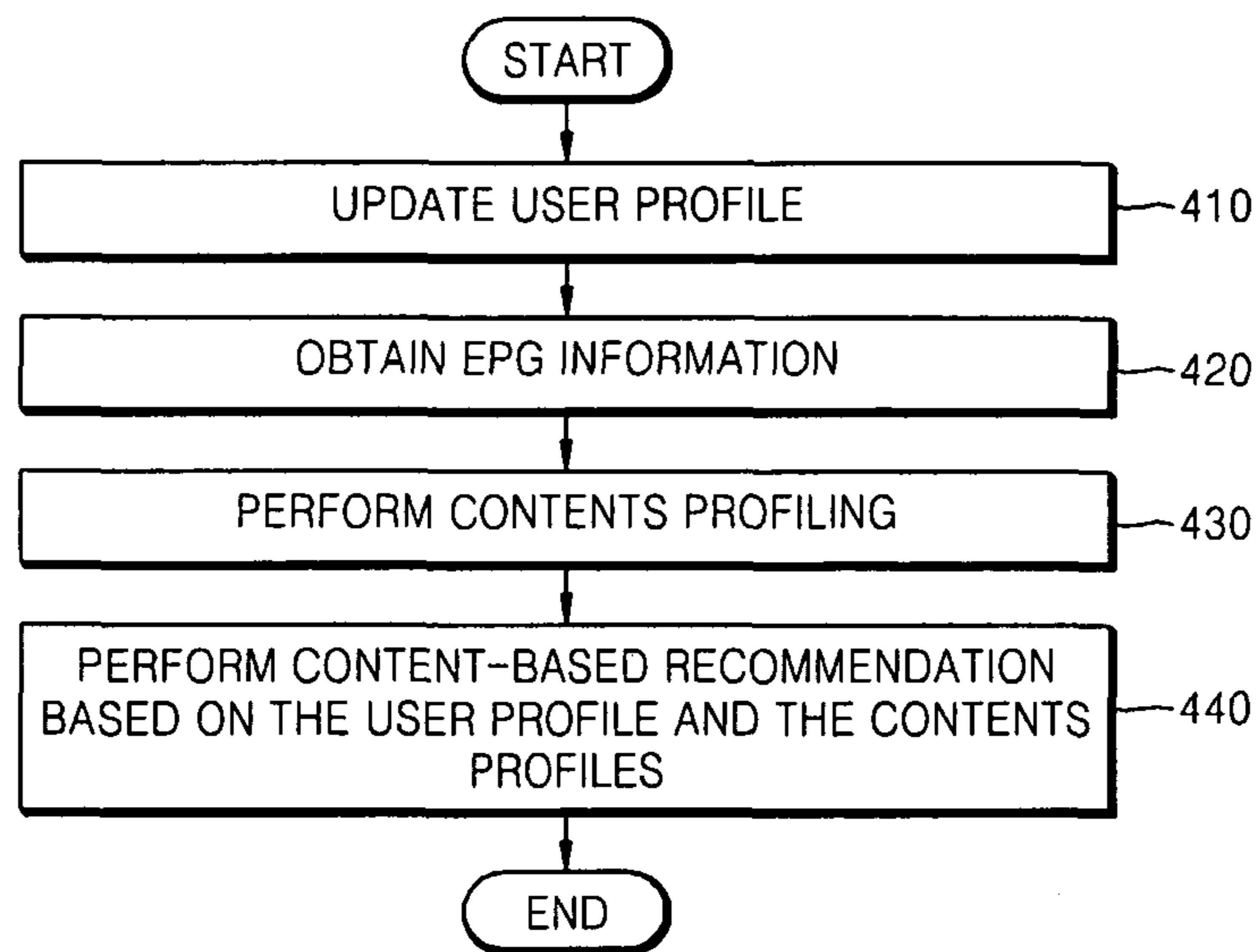


FIG. 5

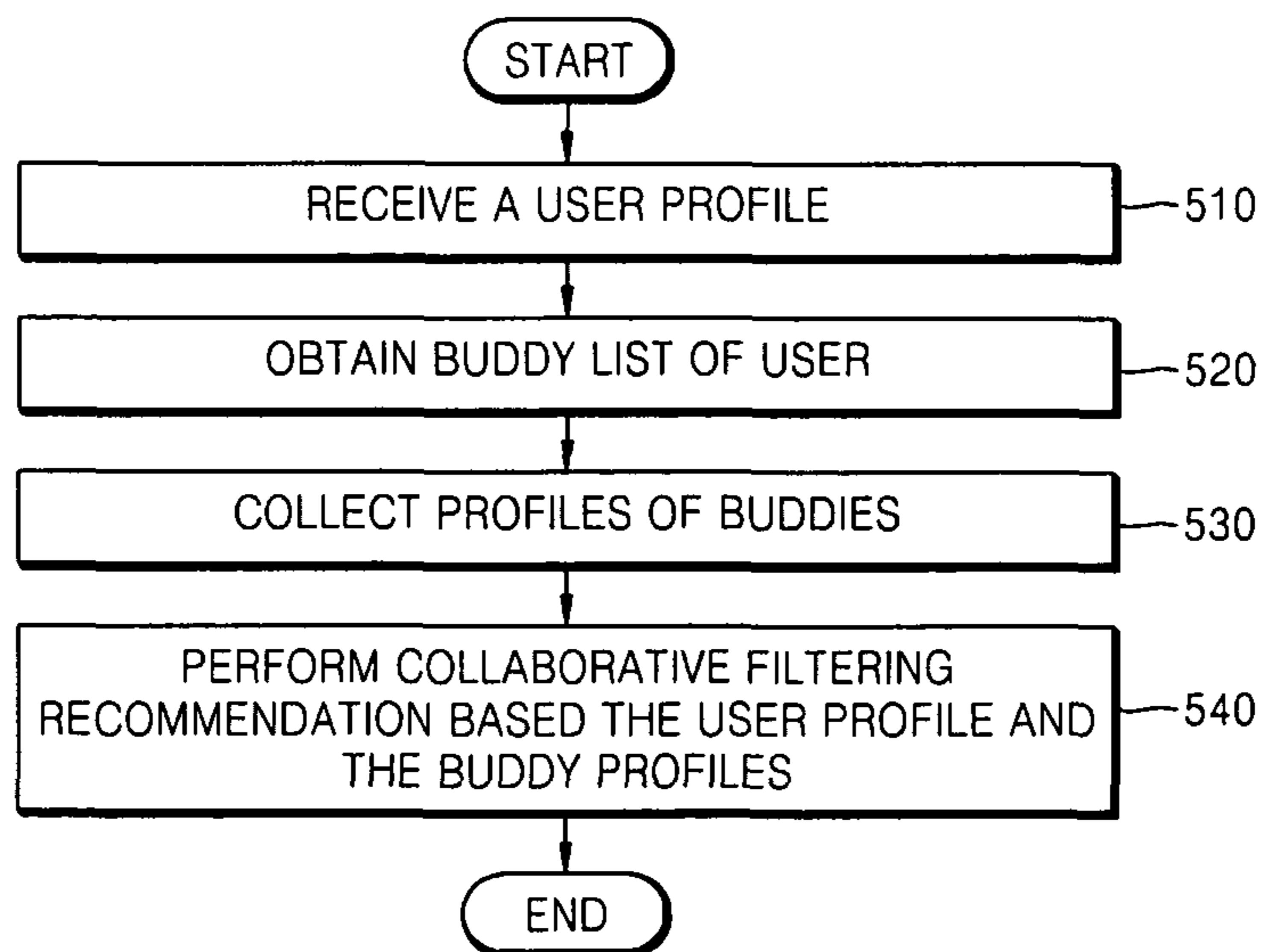


FIG. 6

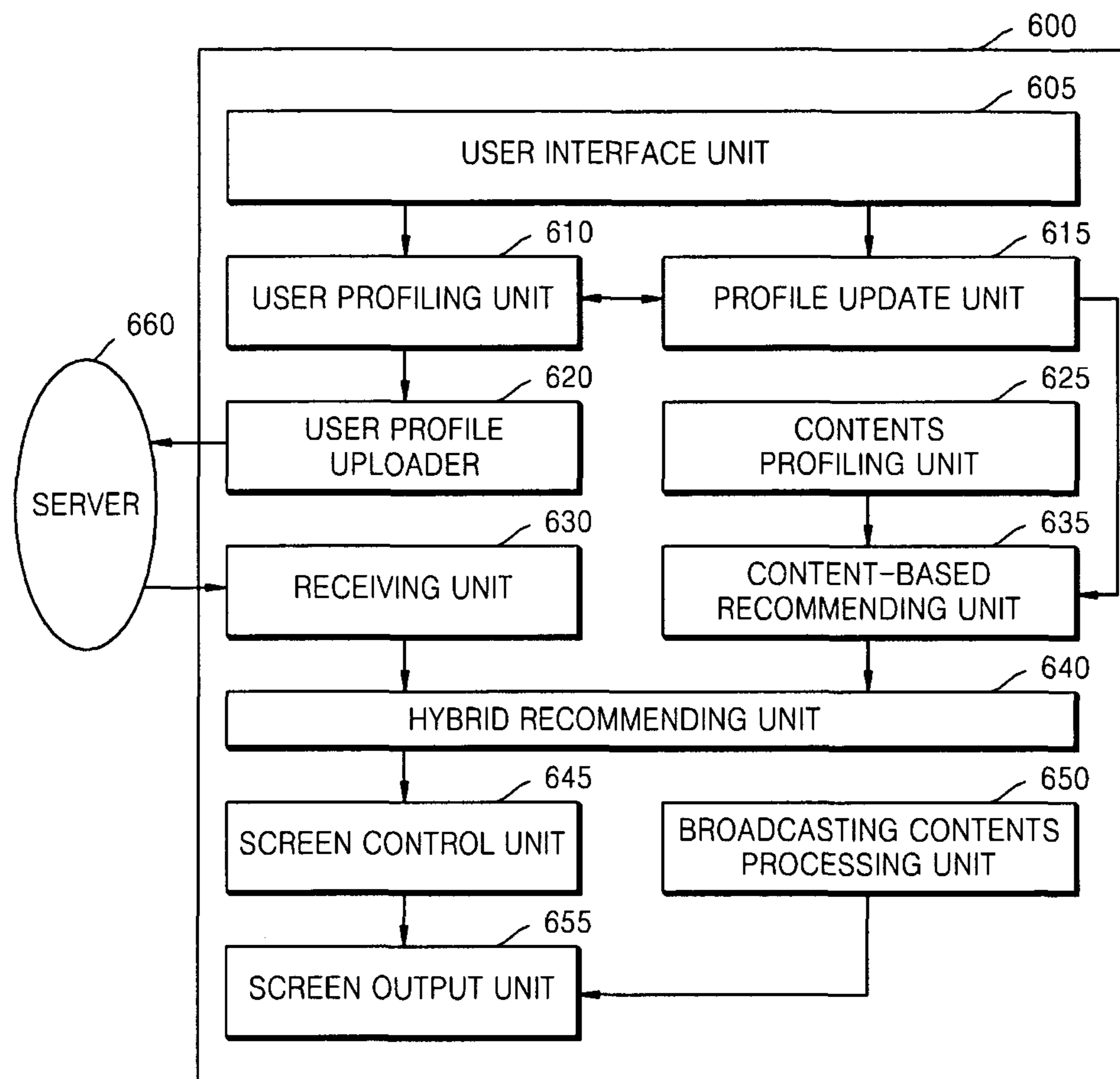
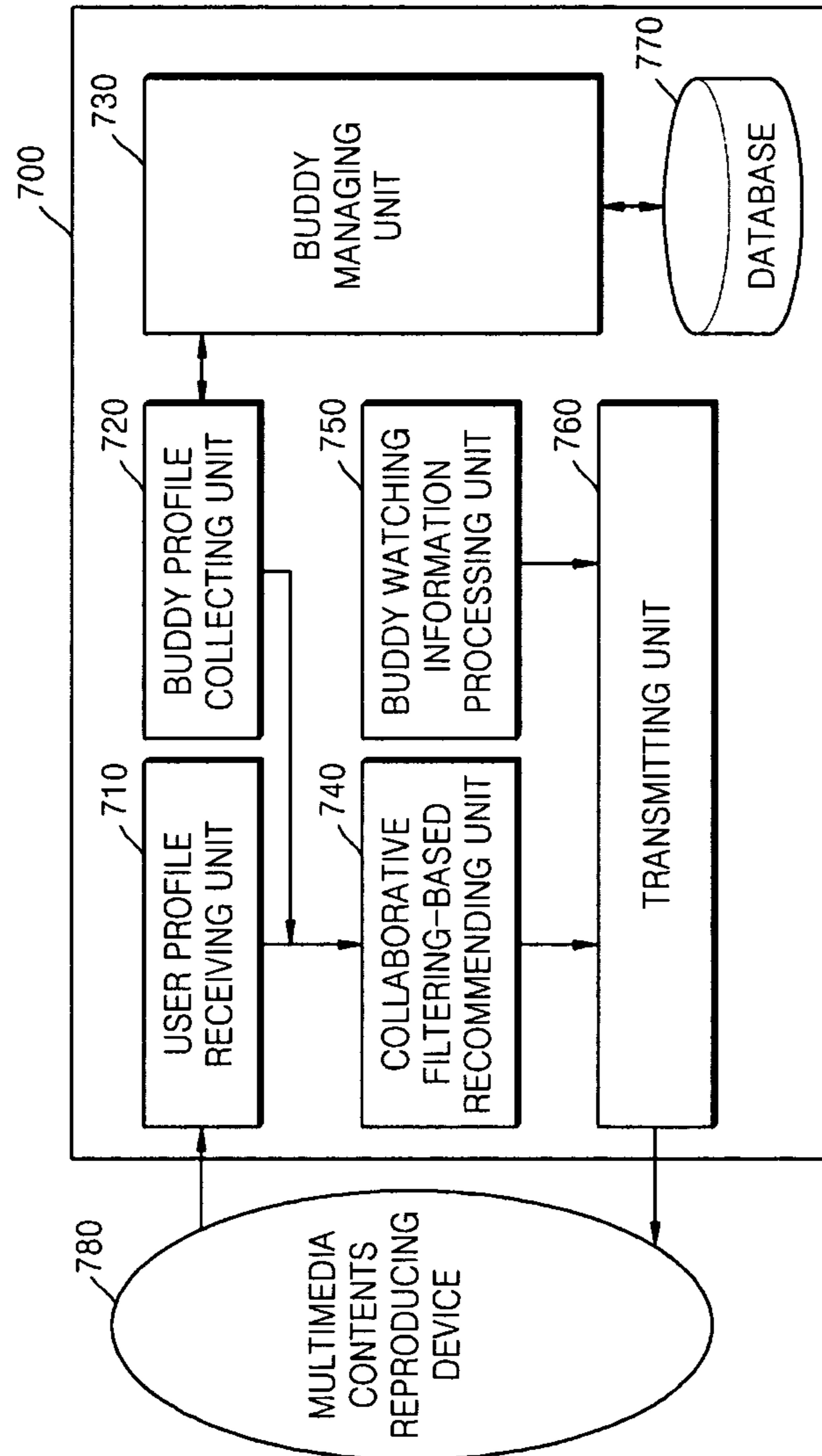


FIG. 7



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**METHOD OF RECOMMENDING
BROADCASTING CONTENTS AND
RECOMMENDING APPARATUS THEREFOR**

CROSS-REFERENCE TO RELATED
APPLICATION

This application claims the benefit of U.S. Provisional Patent Application No. 61/071,365, filed on Apr. 24, 2008, in the U.S. Patent and Trademark Office and Korea Patent Application No. 10-2008-106574, filed on Oct. 29, 2008, in the Korean Patent Office, the disclosures of which are incorporated herein in its entirety by reference.

BACKGROUND

1. Field

One or more embodiments relate to a method of recommending broadcasting contents and a recommending apparatus therefor in a multimedia contents reproducing device of a user.

2. Description of the Related Art

A social network represents a network that horizontally broadens from oneself on the basis of the identity of each individual person. That is, based on an individual, the network adds people who have similar interests to that individual, thereby having a characteristic different from general communities.

Since personal value estimation and personal human networking significantly affect a person's social life, the social network has been highlighted on the basis of that point of view.

Since this social network is highly useful in the establishment of personal identity and for human networking, the social network increases rapidly. In this regard, recently, new internet services based on already built human-networks has been successively developed. For example, to provide a personalized recommendation service via a social network service is usefully employed to provide new music, new movies, new products, new restaurants, etc.

Meanwhile, with respect to the usage of devices such as TVs or PVRs (personal video recorders) that can record/reproduce broadcasting programs, a large number of research has been conducted to enhance a function to recommend a user preferable program from among various channels.

SUMMARY

Additional aspects and/or advantages will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the invention.

One or more embodiments include a method of recommending broadcasting contents and a recommending apparatus therefor in a multimedia contents reproducing device of a user.

To achieve the above and/or other aspects, one or more embodiments may include a method of recommending broadcasting contents, performed by a multimedia contents reproducing device of a first user. The method includes the operations of logging a broadcasting contents viewing behaviour pattern of the first user and generating a first user profile; transmitting the generated first user profile to an external server by using a network; receiving a recommendation result about one or more recommended broadcasting contents from the server, wherein a preference degree correlation between the first user profile and a second user profile of at least one

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second user registered in an account of the first user is reflected in the recommendation result; classifying the one or more recommended broadcasting contents in the received recommendation result into broadcasting timetable categories; and displaying a recommendation result about the classified one or more recommended broadcasting contents on a screen.

With respect to content currently being broadcast, from among the classified one or more recommended broadcasting contents that are displayed, the operation of displaying the recommendation result may include the operation of also displaying on the screen the number of buddies watching the same broadcasting content.

With respect to the content currently being broadcast, from among the classified one or more recommended broadcasting contents that are displayed, the operation of displaying the recommendation result may include the operation of also displaying a broadcasting elapsed status of the content currently being broadcast.

The operation of displaying the recommendation result may include the operation of displaying the recommendation result about the classified one or more recommended broadcasting contents on an area that is the same as a location area of the screen on which Electronic Program Guide (EPG) information is displayed.

The method may further include the operations of recording one or more broadcasting contents from among the classified one or more recommended broadcasting contents that are displayed on the screen, reminding the first user about a start of the one or more broadcasting contents before a start time, or recommending the one or more broadcasting contents to the at least one second user registered in the account of the first user.

The method may further include the operations of receiving a signal indicating a broadcasting contents recommendation request from the first user; updating the first user profile according to the received signal; generating contents profiles with respect to broadcasting contents of all channels obtained from EPG information; and extracting a recommendation result about one or more broadcasting contents, wherein a preference degree correlation between the updated first user profile and the generated contents profiles is reflected in the recommendation result.

The method may further include the operation of combining the recommendation result about the one or more recommended broadcasting contents, wherein the recommendation result is received from the server, with the extracted recommendation result about the one or more broadcasting contents, thereby performing content-based collaborative filtering.

To achieve the above and/or other aspects, one or more embodiments may include a method of recommending broadcasting contents, the method performed by a server which is connected to a multimedia contents reproducing device of a first user via a network, including the operations of receiving a first user profile generated by logging a broadcasting contents viewing pattern of the first user from the multimedia contents reproducing device; obtaining a user list, which includes one or more second users registered in an account of the first user, from a database arranged in the server; collecting each of second user profiles from the one or more second users of the obtained user list; calculating a recommendation result about one or more broadcasting contents in which a preference degree correlation between the first user profile and the collected second user profiles is reflected; and transmitting the calculated recommendation result about the one

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or more broadcasting contents to the multimedia contents reproducing device of the first user.

The method may further include the operation of calculating the number of the one or more second users watching broadcasting content that is the same as broadcasting content currently being broadcast, from among the one or more broadcasting contents of the calculated recommendation result.

To achieve the above and/or other aspects, one or more embodiments may include a broadcasting contents recommending apparatus of a multimedia contents reproducing device of a user, the broadcasting contents recommending apparatus including a user profiling unit to log a broadcasting contents viewing behaviour pattern of the first user and to generate a first user profile; a user profile uploader to transmit the generated first user profile to an external server by using a network; a receiving unit to receive a recommendation result about one or more recommended broadcasting contents from the server, wherein a preference degree correlation between the first user profile and a second user profile of at least a second user registered in an account of the first user is reflected in the recommendation result; a screen control unit to classify the one or more recommended broadcasting contents in the received recommendation result into broadcasting timetable categories; and a screen output unit to display on a screen a recommendation result about the classified one or more recommended broadcasting contents.

With respect to content currently being broadcast, from among the classified one or more recommended broadcasting contents that are displayed, the screen output unit may also display on the screen the number of buddies watching the same broadcasting content.

With respect to content currently being broadcast, from among the classified one or more recommended broadcasting contents that are displayed, the screen output unit may also display a broadcasting elapsed status of the content currently being broadcast.

The screen output unit may display the recommendation result about the classified one or more recommended broadcasting contents on an area that is the same as a location area of the screen on which EPG information is displayed.

The broadcasting contents recommending apparatus may further include a broadcasting contents processing unit that records one or more broadcasting contents from among the classified one or more recommended broadcasting contents that are displayed on the screen, reminds the first user about a start of the one or more broadcasting contents before a start time, or recommends the one or more broadcasting contents to the at least one second user registered in the account of the first user.

The broadcasting contents recommending apparatus may further include a user interface unit to receive a signal indicating a broadcasting contents recommendation request from the first user; a profile update unit to update the first user profile according to the received signal; a contents profiling unit to generate contents profiles with respect to broadcasting contents of all channels obtained from EPG information; and a content-based recommending unit to extract a recommendation result about one or more broadcasting contents, wherein a preference degree correlation between the updated first user profile and the generated contents profiles is reflected in the recommendation result.

The broadcasting contents recommending apparatus may further include a hybrid recommending unit to combine the recommendation result about the one or more recommended broadcasting contents, wherein the recommendation result is received from the server, with the extracted recommendation

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result about the one or more broadcasting contents, wherein the extracted recommendation result is extracted from the content-based recommending unit, thereby performing content-based collaborative filtering.

To achieve the above and/or other aspects, one or more embodiments may include a broadcasting contents recommending server for recommending broadcasting contents to a multimedia contents reproducing device of a first user connected via a network, the broadcasting contents recommending server including a user profile receiving unit to receive a first user profile generated by logging a broadcasting contents viewing pattern of the first user from the multimedia contents reproducing device; a buddy managing unit to obtain a user list, which includes one or more second users registered in an account of the first user, from a database arranged in the server; a buddy profile collecting unit to collect each of second user profiles from the one or more second users of the obtained user list; a collaborative-filter set the based recommending unit to calculate a recommendation result about one or more broadcasting contents in which a preference degree correlation between the first user profile and the collected second user profiles is reflected; and a transmitting unit to transmit the calculated recommendation result about the one or more broadcasting contents to the multimedia contents reproducing device of the first user.

The broadcasting contents recommending server may further include a buddy watching information processing unit to calculate the number of the one or more second users watching broadcasting content that is the same as broadcasting content currently being broadcast, from among the one or more broadcasting contents of the calculated recommendation result.

To achieve the above and/or other aspects, one or more embodiments may include a computer readable recording medium having recorded thereon a program for executing the method of recommending broadcasting contents, performed by a multimedia contents reproducing device of a first user, and the method of recommending broadcasting contents, wherein the method is performed by a server connected to a multimedia contents reproducing device of a first user via a network.

BRIEF DESCRIPTION OF THE DRAWINGS

These and/or other aspects will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a flowchart of a method of recommending broadcasting contents, performed by a multimedia contents reproducing device of a user, according to an embodiment;

FIG. 2 is an example of a screen for broadcasting contents recommendations, according to an embodiment;

FIG. 3 is a flowchart of operational procedures in a user's multimedia contents reproducing device that recommends broadcasting contents according to another embodiment;

FIG. 4 is a flowchart of operational procedures for obtaining a recommendation result from a terminal according to the embodiment of FIG. 3;

FIG. 5 is a flowchart of operational procedures for obtaining a recommendation result based on buddy information from a server according to the embodiment of FIG. 3;

FIG. 6 is a block diagram of a broadcasting contents recommending apparatus in a multimedia contents reproducing device of a user, according to another embodiment; and

FIG. 7 is a block diagram of a broadcasting contents recommending server that recommends broadcasting contents to a multimedia contents reproducing device of a user, according to another embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS

Reference will now be made in detail to embodiments, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout. In this regard, the embodiments may have different forms and should not be construed as being limited to the descriptions set forth herein. Accordingly, the embodiments are merely described below, by referring to the figures, to explain aspects of the present description.

The embodiments relate to a method of recommending a highly reliable broadcasting program by referring to an already built social network, and a recommending apparatus therefor, in a system of a device including a personal video recorder (PVR), a digital TV, a portable multimedia player (PMP) which can record and reproduce broadcasting programs, wherein the system checks a user's viewing habits and patterns, thereby recommending a preferable broadcasting program to the user.

FIG. 1 is a flowchart of a method of recommending broadcasting contents, performed by a multimedia contents reproducing device of a user, according to an embodiment.

Referring to FIG. 1, the method of recommending broadcasting contents, performed by the multimedia contents reproducing device of a first user, according to an embodiment, includes operations of logging a broadcasting contents viewing behaviour pattern of the first user and generating a first user profile (operation 110), transmitting the generated first user profile to an external server by using a network (operation 120), receiving a recommendation result about one or more recommended broadcasting contents from the server, wherein a preference degree correlation between the first user profile and a second user profile of at least a second user registered in an account of the first user is reflected in the recommendation result (operation 130), classifying the one or more recommended broadcasting contents in the received recommendation result into broadcasting timetable categories (operation 140), and displaying a recommendation result about the classified one or more recommended broadcasting contents on a screen (operation 150).

As described above, the embodiments suggest a framework that uses an already built social network, thereby obtaining information about a broadcasting program currently being watched by a buddy when program recommendation is performed, and that refers to such obtained information, thereby recommending a highly reliable and user preferable broadcasting program.

In order to provide a personalized recommending service, it is assumed that each user logs into a corresponding user account when each user turns on a TV. Also, it is assumed that each user may register and delete at least one friend from a buddy list by using various social networks on a website.

First, in operation 110, a behaviour pattern about broadcasting contents such as a viewing habit of or contents which are watched at a high frequency by a user is logged. Then, a user profile with respect to broadcasting programs and the like is generated by using a logged log file. This user profile is basic information used to recommend broadcasting programs, and is base data for the calculation of a user preference degree. Thus, the factors considered to generate a user profile affect a recommending function. For example, the number of times a specific broadcasting program is watched, and which

part in an entire broadcasting program corresponds to a part watched by a user may be determined, and from among a watched broadcasting program and a recorded broadcasting program, the watched broadcasting program may be determined to be more important than the merely recorded broadcasting program.

In operation 120, the user profile is transmitted to an external server by using a network. As suggested by the embodiments, a server for managing a buddy list is necessary to obtain a recommended broadcasting program by using a social network. The server provides a function by which the user's buddy may be added to and deleted from the buddy list, and includes a buddy management module that manages a buddy database, a user profile receiving module that receives and manages a user profile with respect to a recommendation request, and a buddy profile collecting module that requests each of buddies in the buddy list for a profile, receives the profile and manages the received profile.

In operation 130, a recommendation result about one or more recommended broadcasting programs is received, wherein a preference degree correlation is reflected in the recommendation result based on the user profile and a second user profile of at least a second user registered in a buddy list of the user. That is, a correlation between buddy profiles collected by the server and the uploaded user profile is analyzed so that a user preferable broadcasting program from among a large number of broadcasting programs is recommended. In a personalized TV recommendation field, a conventional method that has been technically studied to recommend broadcasting programs is broadly divided into a content-based reasoning method, a collaborative filtering method, and a hybrid recommendation method. In operation 130, the commendation result received from the server may correspond to the collaborative filtering method. However, unlike in the conventional method, in order to recommend broadcasting programs highly match a user preference, the present embodiments use a method of obtaining information about broadcasting programs currently being watched by the user's buddies, wherein the information is already stored in a website, and then reflecting the information in a recommendation algorithm.

When a user turns on a TV (such as an Internet Protocol TV (IPTV not shown)) connected to a network, (not shown) and attempts to check whether user preferable broadcasting programs are currently being broadcast or are to be broadcast, a device (not shown) in the TV may determine user propensity by referring to a watching pattern of the user, may generate a user profile and upload this to a server, and may reflect whether already registered buddies watch corresponding broadcasting programs in a recommendation algorithm, thereby extracting a recommended broadcasting program.

In addition, the content-based reasoning method recommends a broadcasting program most similar to a broadcasting program that was watched by a user in the past. To perform the content-based reasoning method, a broadcasting program is modelled according to various factors such as a genre, a broadcasting channel, a producer, characters, etc. This modelling is referred to as program profiling or contents profiling. The content-based reasoning method performs modelling with respect to programs to be broadcast according to various factors, and refers to a correlation between a profile of a program previously watched by a user and a profile of a program to be broadcast, thereby recommending a broadcasting program in an Electronic Program Guide (EPG). The content-based reasoning method may be performed in a local device of a TV, and may not require a device connected to a network.

The collaborative filtering method checks a viewing pattern and a watching content of high frequency of a user, and learns a preference correlation between users, thereby recommending a specific broadcasting program. That is, the collaborative filtering method finds other users which have preferences similar to that of an individual user, thereby recommending a broadcasting program to the individual user, wherein the broadcasting program is preferred by the users having the similar preferences.

A representative successful case with respect to the collaborative filtering method is a site named Amazon.com that sells books, DVDs, etc. When a user attempts to purchase a specific book, Amazon.com provides a service recommending other books purchased by other users who already purchased that specific book, thereby increasing a purchase success ratio. In general, according to the collaborative filtering method, a TV device transmits a user profile to a server, and the server performs a collaborative recommendation algorithm such that a device connected to a network is necessary.

Meanwhile, the hybrid recommendation method mixes the content-based reasoning method and the collaborative filtering method, and uses the mixed method. This hybrid recommendation method aims to enhance a recommending function, and is also referred to as a content-based collaborative filtering method.

In operation **140**, the one or more recommended broadcasting programs in the received recommendation result are classified into broadcasting timetable categories. With respect to providing the recommended broadcasting program, operation **140** aims to provide a user interface by using a temporal factor regarding a program broadcasting timetable.

In general, with respect to providing recommended broadcasting programs, these recommended broadcasting programs may be aligned in order of recommendation similarity, or may be aligned to be browsed according to a channel or a genre. However, the embodiment of FIG. 1 selects the temporal factor by considering a user request and a user interaction. For example, the one or more recommended broadcasting programs are categorized into a program currently being broadcast, a program to be broadcast in 30 minutes, and a program to be broadcast at a late time (e.g., around midnight).

In operation **150**, a recommendation result about the classified one or more recommended broadcasting programs is displayed on a screen. At this time, with respect to the program currently being broadcast from among the classified one or more recommended broadcasting programs that are displayed on the screen, the number of buddies watching the same broadcasting program may also be displayed on the screen. Thus, a broadcasting program watched by as many buddies as possible may match an individual user's interest propensity, and such a broadcasting program may be a common subject shared between the buddies in on/offline dialogues at a later time.

Hereinafter, an EPG screen including such a recommendation result will be described with reference to FIG. 2.

FIG. 2 is an example of a screen for broadcasting contents recommendation, according to an embodiment.

Referring to FIG. 2, an EPG screen **210** may be a (translucent) sub-screen displayed on a side of a TV screen **200**. However, it is understood that the sub-screen may be displayed on any portion of TV screen. From among menus related to an EPG, a sub-menu may include a recommendation **220** and an all-menu **230**. The all-menu **230** displays a general EPG screen. The screen of FIG. 2 corresponds to a result screen when the recommendation **220** is selected.

According to the related art, with respect to display of a recommendation result, enabling it to be browsed by a user, recommended broadcasting programs are displayed in order of recommendation similarity degree, or in categories classified into a broadcasting channel, a genre, etc.

However, the screen is constituted in such a manner that browsing may be performed by using a temporal factor, as illustrated in FIG. 2. For example, the screen may include a recommended program currently being broadcast that may be immediately watched by a user, a recommended program to be broadcast soon, and a recommended program to be broadcast around midnight so that the user may watch it late at night. Accordingly, the user is guided to watch the recommended broadcasting programs according to time.

Meanwhile, when the recommended broadcasting programs are displayed on the screen, a broadcasting elapsed status of the recommended program currently being broadcast may be also displayed on the screen so as to assist a user to determine whether or not to watch a program of which a broadcasting time is substantially elapsed.

Recommended broadcasting programs may be displayed on the same area (or different area) of the screen by using hot-keys that enable a user to see entire EPG information, thereby naturally exposing the recommended broadcasting programs to the user.

Referring back to FIG. 2, with respect to the recommended program currently being broadcast (that is, on air now **240**), it is possible to check that a movie entitled "Titanic" is being watched by 5 buddies, and a TV drama series entitled "Lost" is being watched by 2 buddies. At this time, for the recommended program currently being broadcast from among the recommended broadcasting programs, a broadcasting elapsed status may also be displayed.

In the case of the recommended program to be broadcast soon (that is, starting-soon—menu **250**), the EPG screen **210** shows that a movie entitled "Rush Hour" is recommended and will start in 20 minutes. Meanwhile, in the case of the recommended program to be broadcast late at night (that is, later today **260** (later-today—menu **250**), it is possible to check that a movie entitled "Aliens" will start at 23:00.

FIG. 3 is a flowchart of operational procedures in a user's multimedia contents reproducing device that recommends broadcasting contents according to another embodiment. Meanwhile, FIG. 4 is a flowchart of operational procedures for obtaining a recommendation result from a terminal, and FIG. 5 is a flowchart of operational procedures for obtaining a recommendation result based on buddy information from a server. The flowchart of FIG. 5 corresponds to operation **370** of the flowchart of FIG. 3.

Referring to FIG. 3, a user turns on a TV and logs into his or her corresponding account (operation **310**). A viewing pattern of the user changing channels is logged (operation **320**), and the logged viewing pattern is used to generate a user profile. Whether the user requests a recommendation program is determined (operation **330**), and in the case where the user requests the recommendation program, a recommendation result is obtained from a terminal (operation **340**). That is, the recommendation program is extracted by the terminal itself.

The operational procedures for obtaining the recommendation result from the terminal will now be described with reference to FIG. 4. In the case where the user requests the recommendation program, the terminal updates a user profile (operation **410**). After that, the terminal obtains EPG information about programs to be broadcast (operation **420**), and performs profiling with respect to programs broadcast in all channels, thereby generating a contents profile (operation

430). Next, the terminal performs a recommendation algorithm by inputting the user profile and the contents profile thereto, and extracts the recommendation result (operation 440). Referring back to FIG. 3, after the recommendation result is obtained from the terminal (operation 340), a current connection status with a network is checked (operation 350). As a result of the check, if it is not possible to use the network, the recommendation result obtained from the terminal is displayed to the user (operation 390), and a recommendation function is ended.

However, if it is possible to use the network now, the updated user profile is transmitted to the server (operation 360). That is, the server is requested to transmit a recommended program. An operational procedure for extracting a recommended program from the server (operation 340) will now be described with reference to FIG. 5. The server receives the user profile and user information (operation 510), obtains a buddy list of the user via a database (operation 520), requests buddy profiles to each of corresponding terminals, and collects the buddy profiles (operation 530). The server performs a collaborative filtering recommendation algorithm by inputting the collected buddy profiles, and the user profile, and transmits a recommendation result to a user terminal (operation 540). The user terminal combines the recommendation result about recommended programs, wherein the recommendation result is received from the server, with the extracted recommendation result about recommended programs (operation 380), thereby performing a content-based collaborative filtering. As a result, a final recommendation result is displayed on a screen (operation 390).

When the final recommendation result is displayed on the screen, the number of buddies watching the recommended broadcasting programs may also be displayed on the screen, so further satisfy the user with respect to the final recommendation result.

Also, after the final recommendation result is displayed, a function for recording one or more broadcasting programs from among the recommended broadcasting programs that are displayed on the screen, or a function for reminding the user of a start of a broadcasting program from among the recommended broadcasting programs may be set. Also, one or more broadcasting programs from among the recommended broadcasting programs may be recommended to another user included in the buddy list of the user.

FIG. 6 is a block diagram of a broadcasting content recommending apparatus 600 in a multimedia contents reproducing device of a user, according to another embodiment.

Referring to FIG. 6, the broadcasting contents recommending apparatus 600 in a multimedia contents reproducing device of a first user, according to an embodiment of, includes a user profiling unit 610 that logs a broadcasting contents viewing pattern of the first user and then generates a first user profile, a user profile uploader 620 that transmits the generated first user profile to an external server 660 by using a network, and a receiving unit 630 that receives a recommendation result about one or more broadcasting contents from the server 660, wherein a preference degree correlation between the first user profile and a second user profile of at least a second user registered in an account of the first user is reflected in the recommendation result. Also, the broadcasting contents recommending apparatus 600 may include a screen control unit 645 that classifies the one or more recommended broadcasting contents in the received recommendation result into broadcasting timetable categories, and a screen output unit 655 that displays on a screen a recommendation result about the classified one or more recommended broadcasting contents.

The user profiling unit 610 is a module that logs a behaviour pattern of a user watching a TV, and analyzes this behaviour pattern. In order to generate a user profile, the user profiling unit 610 considers the number of times a specific broadcasting program is watched, which part in an entire broadcasting program corresponds to a part watched by the user, and the like.

The user profile uploader 620 is a module that uploads the user profile and user information to the server 660 so that correlation between the user profile of the user currently logged in and profiles of buddies may be calculated.

The receiving unit 630 is a network interface module that receives recommendation result data transmitted from the server 660 via a network, for example, Internet. However it is understood that it can be wired or wireless network.

The screen control unit 645 controls the screen so as to enable the user to browse the one or more recommended broadcasting contents by using a temporal factor. For example, the one or more recommended broadcasting contents may be classified into a recommended program currently being broadcast, a recommended program to be broadcast soon, and a recommended program to be broadcast late at night. Hence, the user may select and watch such recommended broadcasting programs according to time.

The screen output unit 655 is an image display module that displays on the screen a recommendation result about the classified recommended broadcasting programs.

Also, the broadcasting contents recommending apparatus 600 may further include a broadcasting contents processing unit 650. This broadcasting contents processing unit 650 is a module that enables various application operations including a recording function, a pre-recording function, a reminding function, a recommending function, and the like to be processed with respect to the recommended broadcasting programs that are displayed on the screen.

Meanwhile, the broadcasting contents recommending apparatus 600 may further include a user interface unit 605 that receives a signal indicating a broadcasting program recommendation request from the user, a profile update unit 615 that updates the user profile according to the received signal, and a contents profiling unit 625 that generates contents profiles with respect to broadcasting programs of all channels obtained from EPG information. The contents profiling unit 625 is a module that performs profiling with respect to each broadcasting program obtained from EPG data. When program profiling is performed, various kinds of additional information including a broadcasting time, a broadcasting channel, a title, a genre, characters, a director, a producer, and/or the like may be considered.

The broadcasting contents recommending apparatus 600 may further include a content-based recommending unit 635 that analyzes a correlation between the contents profiles and the user profile, and performs content-based recommendation.

Also, the broadcasting contents recommending apparatus 600 may further include a hybrid recommending unit 640 that combines the recommendation result about recommended programs, wherein the recommendation result is received from the server 660, with the recommendation result about recommended programs, wherein the recommendation result is extracted from the content-based recommending unit 635, thereby performing content-based collaborative filtering.

FIG. 7 is a block diagram of a broadcasting contents recommending server 700 that recommends broadcasting contents to a multimedia contents reproducing device 780 of a user, according to another embodiment.

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Referring to FIG. 7, the broadcasting contents recommending server 700 that recommends broadcasting contents to the multimedia contents reproducing device 780 of a first user, according to the embodiment, includes a user profile receiving unit 710 that receives a first user profile generated by logging a broadcasting contents watching pattern of the first user from the multimedia contents reproducing device 780, a buddy managing unit 730 that obtains a buddy list, which includes one or more second users registered in an account of the first user, from a database 770 arranged in the broadcasting contents recommending server 700, a buddy profile collecting unit 720 that collects each of second user profiles from the one or more second users included in the obtained buddy list, a collaborative filtering-based recommending unit 740 that calculates a recommendation result about one or more broadcasting contents on which preference degree correlation between the first user profile and the collected second user profiles is reflected, and a transmitting unit 760 that transmits the calculated recommendation result about the one or more broadcasting contents to the multimedia contents reproducing device 780.

Also, the broadcasting contents recommending server 700 may further include a buddy watching information processing unit 750 that calculates the number of buddies who watch broadcasting content that is the same as broadcasting content currently being broadcast from among the one or more broadcasting contents of the calculated recommendation result.

As described above, one or more of the above embodiments regarding the method of recommending broadcasting contents provide the framework that can calculate the recommendation result about highly reliable broadcasting programs by referring to at least one piece of friend information that is stored in a website by a user, so that one or more of the above embodiments can enhance a recommending function with respect to TV programs.

Also, one or more of the above embodiments provide an intuitive user interface enabled to categorize recommended broadcasting programs according to time and display them on a screen, and to show the number of buddies watching the recommended broadcasting programs, so that one or more of the above embodiments can efficiently use the recommending function.

Meanwhile, the method of recommending broadcasting contents according to the one or more of the above embodiments can be written as computer programs and can be implemented in general-use digital computers that execute the programs using a computer readable recording medium.

In addition, a data structure used in the one or more of the above embodiments can be written in a computer readable recording medium.

Examples of the computer readable recording medium include magnetic storage media (e.g., ROM, floppy disks, hard disks, etc.), and optical recording media (e.g., CD-ROMs, or DVDs).

It should be understood that the exemplary embodiments described therein should be considered in a descriptive sense only and not for purposes of limitation. Descriptions of features or aspects within each embodiment should typically be considered as available for other similar features or aspects in other embodiments.

What is claimed is:

1. A method of recommending broadcasting contents, performed by a multimedia contents reproducing device of a first user, the method comprising:

logging a broadcasting contents viewing behaviour pattern of the first user and generating a first user profile;

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transmitting the generated first user profile to a server by using a network;

receiving a collaborative recommendation result, for the first user, about one or more recommended broadcasting contents from the server that is based on a preference degree correlation between the first user profile and a second user profile of a second user,

wherein the second user is registered as a buddy of the first user, and

wherein the second user profile is based on a broadcasting contents viewing behaviour pattern of the second user;

generating a hybrid recommendation result, for the first user, by combining the collaborative recommendation result received from the server and a content-based recommendation result extracted from the multimedia contents reproducing device of the first user that is based on the broadcasting contents viewing behaviour pattern of the first user,

wherein the preference degree correlation considers which part of an entire program corresponds to a part watched by the first user;

classifying the hybrid recommendation result based on broadcasting timetable categories; and

displaying, to the first user, the classified hybrid recommendation result, which is based on the timetable categories.

2. The method of claim 1, wherein, with respect to content currently being broadcast, from among the classified hybrid recommended broadcasting result that is displayed, the displaying of the hybrid recommendation result comprises also displaying on the screen the number of buddies watching the same broadcasting content.

3. The method of claim 2, wherein, with respect to the content currently being broadcast, from among the classified hybrid recommended result that is displayed, the displaying of the hybrid recommendation result comprises also displaying a broadcasting elapsed status of the content currently being broadcast.

4. The method of claim 3, wherein the displaying of the classified hybrid recommendation result comprises displaying the hybrid recommendation result about one or more recommended broadcasting contents on an area that is the same as a location area of the screen on which EPG (Electronic Program Guide) information is displayed.

5. The method of claim 4, further comprising: recording one or more broadcasting contents from among the classified hybrid recommended result that is displayed on the screen,

reminding the first user about a start of the one or more broadcasting contents before a start time, or recommending the one or more broadcasting contents to the at least one second user registered as the buddy of the first user.

6. The method of claim 1, further comprising: receiving a signal indicating a broadcasting contents recommendation request from the first user;

updating the first user profile according to the received signal;

generating contents profiles with respect to broadcasting contents of all channels obtained from EPG information; and

extracting a recommendation result about one or more broadcasting contents, wherein a preference degree correlation between the updated first user profile and the generated contents profiles is reflected in the recommendation result.

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7. The method of claim 6, further comprising combining the collaborative recommendation result about the one or more recommended broadcasting contents, wherein the recommendation result is received from the server, with the content-based recommendation result about the one or more broadcasting contents, thereby performing content-based collaborative filtering.

8. A method of recommending broadcasting contents, the method performed by a server which is connected to a multimedia contents reproducing device of a first user via a network, the method comprising:

receiving a first user profile generated by logging a broadcasting contents viewing pattern of the first user from the multimedia contents reproducing device, wherein the first user profile is based on a broadcasting contents viewing behaviour pattern of the first user;

obtaining a user list, which comprises a second user registered as buddies of the first user;

collecting the second user profiles from the second user of the obtained user list, wherein the second user profile is based on a broadcasting contents viewing behaviour pattern of the second user;

calculating a collaborative recommendation result about one or more broadcasting contents based on a preference degree correlation, which correlates the received first user profile and the collected second user profile;

transmitting the calculated collaborative recommendation result about the one or more broadcasting contents to the multimedia contents reproducing device of the first user; and

generating a hybrid recommendation result by combining the calculated collaborative recommendation result and a content-based recommendation result extracted from the multimedia contents reproducing device of the first user that is based on the broadcasting contents viewing pattern of the first user,

wherein the preference degree correlation considers which part of an entire program corresponds to a part watched by the first user.

9. The method of claim 8, further comprising calculating a number of second users, who are selected as buddies by the first user, watching broadcasting content that is the same as broadcasting content currently being broadcast, from among the one or more broadcasting contents of the calculated collaborative recommendation result.

10. A broadcasting contents recommending apparatus of a multimedia contents reproducing device of a user, the broadcasting contents recommending apparatus comprising:

a user profiling unit to log a broadcasting contents viewing behaviour pattern of the first user and generating a first user profile, wherein the first user profile is based on the broadcasting contents viewing behaviour pattern of the first user;

a user profile uploader to transmit the generated first user profile to an external server by using a network;

a receiving unit to receive a collaborative recommendation result about one or more recommended broadcasting contents, received from the server based on a preference degree correlation between the first user profile and a second user profile of a second user registered as a buddy of the first user, wherein the second user profile is based on a broadcasting contents viewing behaviour pattern of the second user;

a processor to determine a hybrid recommendation result by combining the collaborative recommendation result received from the server and a content-based recommendation result extracted from the multimedia contents

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reproducing device of the first user that is based on the broadcasting contents viewing behaviour pattern of the first user,

wherein the preference degree correlation considers which part of an entire program corresponds to a part watched by the first user;

a screen control unit to classify the determined hybrid recommendation result into broadcasting timetable categories; and

a screen output unit to display on a screen the classified hybrid recommendation result.

11. The broadcasting contents recommending apparatus of claim 10, wherein, with respect to content currently being broadcast, from among the classified hybrid recommendation result that are displayed, the screen output unit also displays on the screen a number of buddies watching the same broadcasting content.

12. The broadcasting contents recommending apparatus of claim 11, wherein, with respect to content currently being broadcast, from among the classified hybrid recommendation results that are displayed, the screen output unit also displays a broadcasting elapsed status of the content currently being broadcast.

13. The broadcasting contents recommending apparatus of claim 12, wherein the screen output unit displays a recommendation result about the classified hybrid recommendation result on an area that is the same as a location area of the screen on which EPG information is displayed.

14. The broadcasting contents recommending apparatus of claim 13, further comprising a broadcasting contents processing unit that records one or more broadcasting contents from among the classified hybrid recommendation result that are displayed on the screen, reminds the first user about a start of broadcasting contents before a start time, or recommends the hybrid recommendation result to the at least one second user registered as the buddy of the first user.

15. The broadcasting contents recommending apparatus of claim 10, further comprising:

a user interface unit to receive a signal indicating a broadcasting contents recommendation request from the first user;

a profile update unit to update the first user profile according to the received signal;

a contents profiling unit to generate contents profiles with respect to broadcasting contents of all channels obtained from EPG information; and

a content-based recommending unit to extract a recommendation result about one or more broadcasting contents, wherein a preference degree correlation between the updated first user profile and the generated contents profiles is reflected in the recommendation result.

16. The broadcasting contents recommending apparatus of claim 15, further comprising a hybrid recommending unit to combine the recommendation result about the one or more recommended broadcasting contents, wherein the recommendation result is received from the server, with the extracted recommendation result about the one or more broadcasting contents, wherein the extracted recommendation result is extracted from the content-based recommending unit, thereby performing content-based collaborative filtering.

17. A broadcasting contents recommending server for recommending broadcasting contents to a multimedia contents reproducing device of a first user connected via a network, the broadcasting contents recommending server comprising:

a user profile receiving unit to receive a first user profile generated by logging a broadcasting contents viewing

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pattern of the first user, from the multimedia contents reproducing device, wherein the first user profile is based on the broadcasting contents viewing behaviour pattern of the first user;

a buddy managing unit to obtain a user list, which comprises one or more second users registered as buddies of the first user, from a database arranged in the server;

a buddy profile collecting unit to collect a second user profile from a second user of the obtained user list, wherein the second user profile is based on the broadcasting contents viewing behaviour pattern of the second user;

a collaborative filtering-based recommending unit to calculate a collaborative recommendation result about one or more broadcasting contents based on a preference degree correlation between the first user profile and the second user profile; and

a transmitting unit to transmit the calculated recommendation result about the one or more broadcasting contents to the multimedia contents reproducing device of the first user,

wherein a final recommendation result is generated by combining the calculated collaborative recommendation result and a content-based recommendation result extracted from the multimedia contents reproducing device of the first user that is based on the broadcasting contents viewing pattern of the first user,

wherein the preference degree correlation considers which part of an entire program corresponds to a part watched by the first user, and

wherein the calculated collaborative recommendation result is generated in accordance with the preference degree correlation between the first user profile and the second user profile.

18. The broadcasting contents recommending server of claim **17**, further comprising a buddy watching information processing unit to calculate the number of the one or more second users watching broadcasting content that is the same as broadcasting content currently being broadcast, from among the one or more broadcasting contents of the calculated collaborative recommendation result.

19. A non-transitory computer readable recording medium having recorded thereon a program for executing the method of claim **1**.

20. A non-transitory computer readable recording medium having recorded thereon a program for executing the method of claim **8**.

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21. A method of recommending broadcasting contents, performed by a multimedia contents reproducing device of a first user, the method comprising:

logging a broadcasting contents viewing behaviour pattern of the first user and generating a first user profile;

transmitting the generated first user profile to a server by using a network;

receiving a recommendation result about one or more recommended broadcasting contents from the server wherein a preference degree correlation between the first user profile and a second user profile of at least one second user registered as a buddy of the first user is reflected in the recommendation result;

generating a final recommendation result by combining the recommendation result received from the server and the recommendation result extracted from the multimedia contents reproducing device of the first user, wherein the recommendation result received from the server is generated in accordance with the preference degree correlation;

classifying one or more recommended broadcasting contents in the final recommendation result into broadcasting timetable categories; and

displaying a recommendation result about the classified one or more recommended broadcasting contents on a screen,

wherein the preference degree correlation is based on a number of times a specific broadcasting program is watched, which part in an entire broadcasting program corresponds to a part watched by a user, and from among a watched broadcasting program and a recorded broadcasting program, the watched broadcasting program is determined to be more important than the only recorded broadcasting program.

22. The method of claim **1**, wherein the collaborative recommendation result and the hybrid recommendation result are based on the program that is currently being watched by the second user.

23. The method of claim **1**, wherein the hybrid recommendation result, which is based on a combination of the collaborative recommendation result and the content-based recommendation result, recommends, to the first user, the program that is currently being watched by the second user.

24. The method of claim **1**, wherein the content-based recommendation result is based on profiling the contents of a plurality of broadcasts based on one or more of genre, broadcasting channel, producer, characters, and actors.

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