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(54) **APPARATUS AND METHOD TO FACILITATE UNIVERSAL REMOTE CONTROL**

(57) **ABSTRACT**

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One embodiment of the present invention provides a universal remote control, which includes a display screen and a user input mechanism. The universal remote control also includes a processing unit that is configured to display information on the display screen and to accept selection data from the user input mechanism. The universal remote control additionally includes a wireless communication mechanism that is configured to provide communications between the processing unit and an appliance or computer program running on a computer system. The appliance provides information to be displayed on the display screen, and information entered through the user input mechanism is communicated to the appliance. Since the appliance provides the information to be displayed on the display screen and also interprets the entries on the input mechanism, the universal remote control needs no special knowledge about the appliance.

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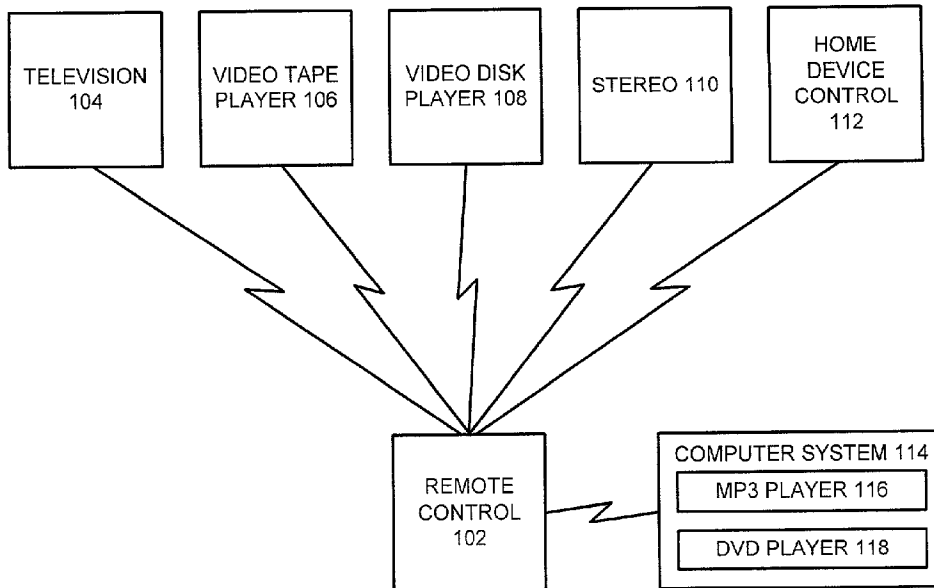
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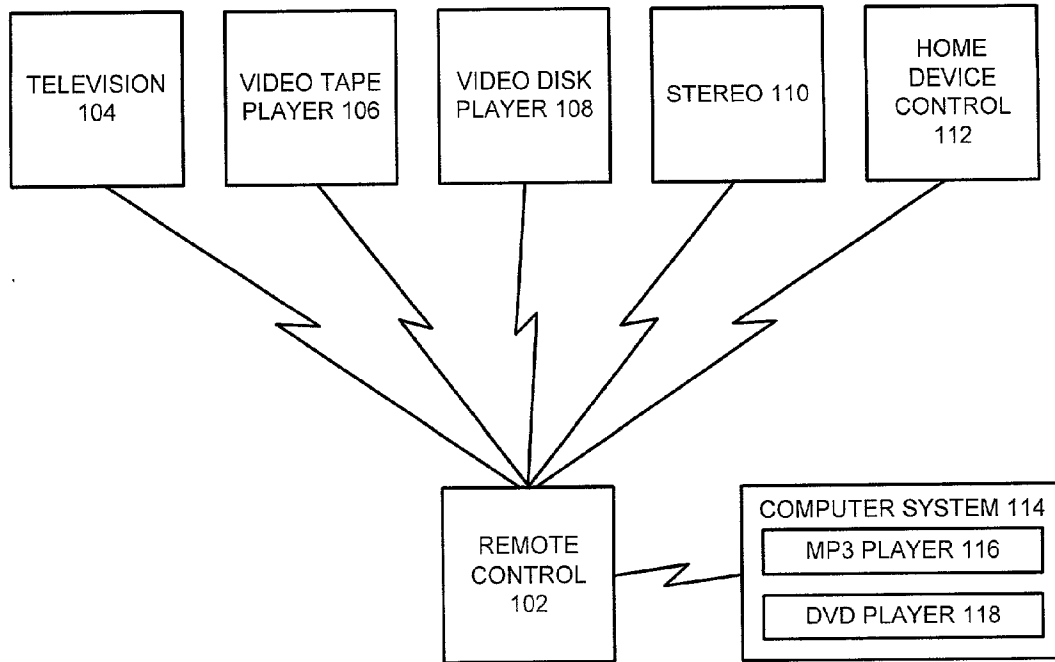


FIG. 1

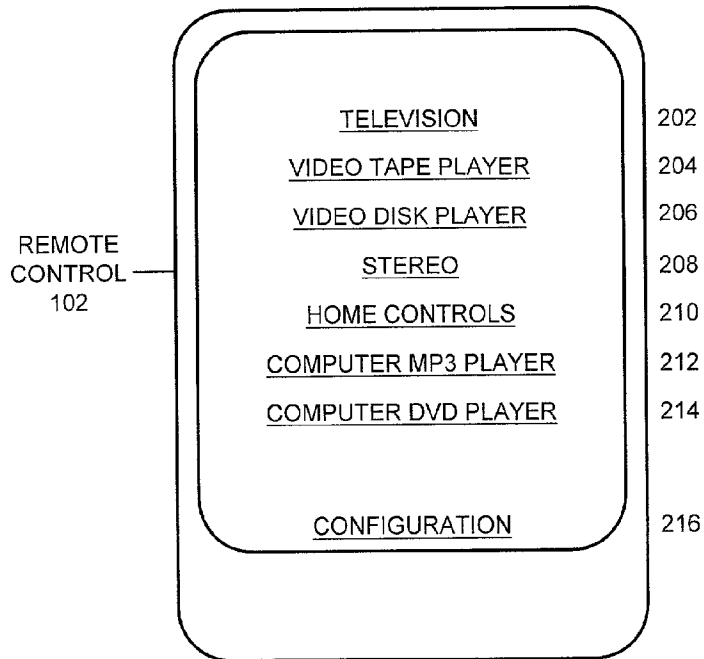


FIG. 2

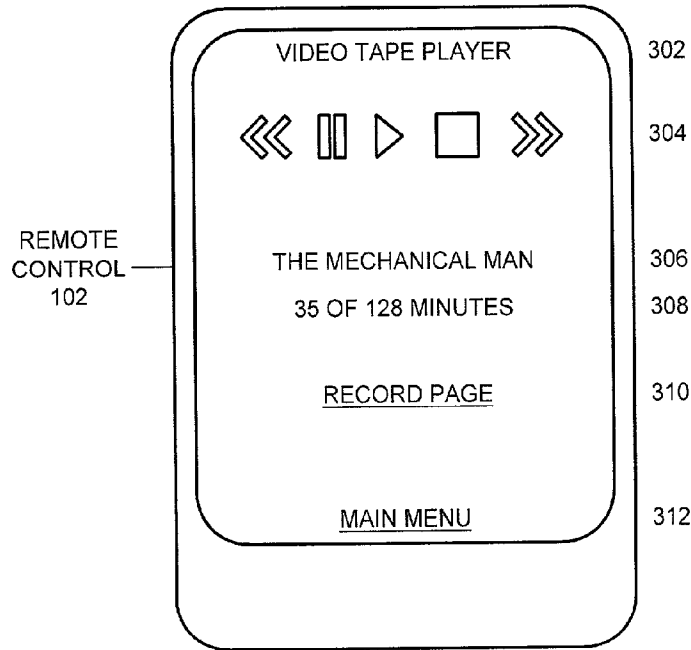


FIG. 3

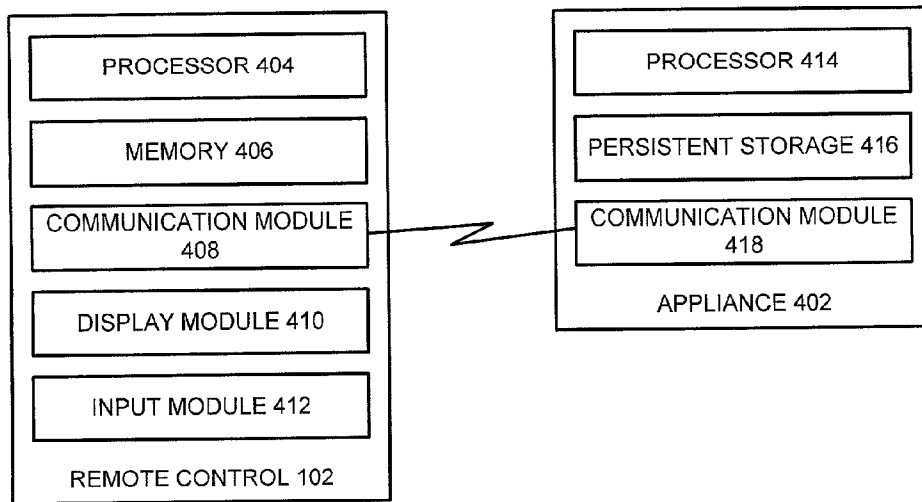


FIG. 4

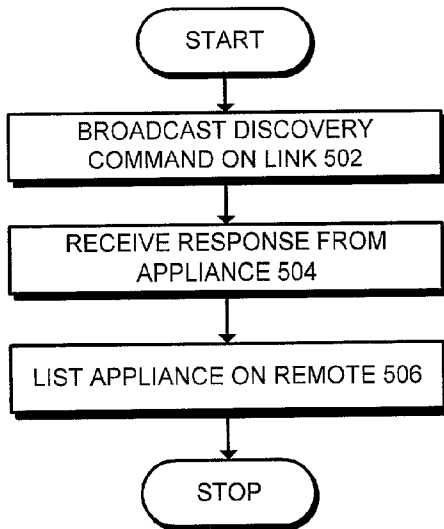


FIG. 5

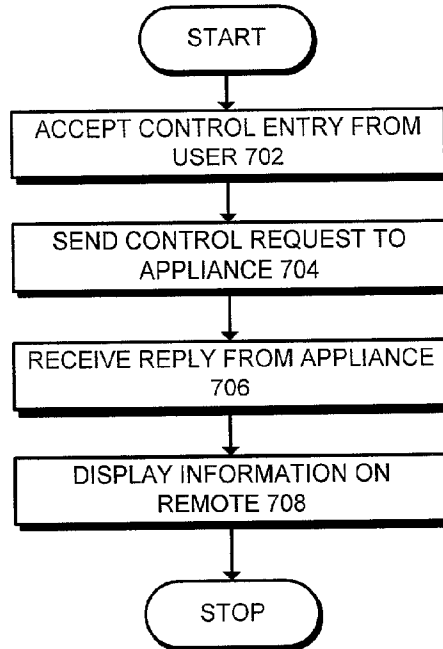


FIG. 7

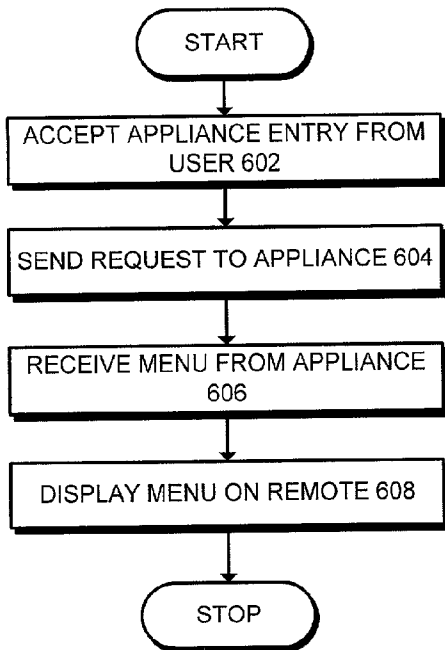


FIG. 6

APPARATUS AND METHOD TO FACILITATE UNIVERSAL REMOTE CONTROL

BACKGROUND

[0001] 1. Field of the Invention

[0002] The present invention relates to remote controls. More specifically, the present invention relates to an apparatus and a method to facilitate a just-in-time universal remote control for controlling multiple appliances.

[0003] 2. Related Art

[0004] Modern appliances typically include a remote control that allows the user to control the functions of the appliance without having to go to the appliance. Remote controls for complex appliances such as home stereo systems or video disk players have myriad buttons and switches to control the many functions of the appliance. While all of these buttons and switches are necessary for complete control of the appliance, users typically use only a small subset of the total controls on the remote control. The controls that are not normally used clutter the remote control and can cause confusion to the user when trying to locate a seldom-used feature.

[0005] Users are also confronted with multiple remote controls, one for each remotely controllable appliance in the home, such as a television, a video tape player, a video disk player, a stereo system, and a home device control system. Remote controls from different manufacturers can have widely different user interfaces, which can also lead to user confusion even after selecting the proper remote control device.

[0006] Manufacturers have created so-called universal remote controls, which can be trained to mimic several remote controls, and can then control each appliance for which they have been trained. While universal remote controls attempt to address the problem of multiple remote controls, these devices are even more complex to operate, further confusing the user. Additionally, a universal remote control may not be able to duplicate every command sequence designed into a remote control designed for the appliance, and for future appliances.

[0007] Hence, users must spend time learning a new remote control or programming an existing universal remote control each time they purchase a new remotely controllable appliance, which detracts from the enjoyment of using the appliance after it is first purchased.

[0008] What is needed is an apparatus and a method to provide remote control over multiple appliances without the difficulties described above.

SUMMARY

[0009] One embodiment of the present invention provides a universal remote control, which includes a display screen and a user input mechanism. The universal remote control also includes a processing unit that is configured to display information on the display screen and to accept selection data from the user input mechanism. The universal remote control additionally includes a wireless communication mechanism that is configured to provide communications between the processing unit and an appliance. The appliance provides information to be displayed on the display screen,

and information entered through the user input mechanism is communicated to the appliance. Since the appliance provides the information to be displayed on the display screen and also forwards the entries on the input mechanism, the universal remote control needs no special knowledge about the appliance.

[0010] In one embodiment of the present invention, the universal remote control includes a touch screen, which functions as the display screen and the user input mechanism.

[0011] In one embodiment of the present invention, the universal remote control includes a discovery mechanism that is configured to manually discover the appliance through an entry on the user input mechanism.

[0012] In one embodiment of the present invention, the universal remote control includes a discovery mechanism that is configured to automatically discover the appliance through the wireless communication mechanism.

[0013] In one embodiment of the present invention, the discovery mechanism includes a Bluetooth™ discovery mechanism. Bluetooth™ is a trademark owned by Bluetooth SIG, Inc.

[0014] In one embodiment of the present invention, the wireless communication mechanism is configured to receive information to be displayed on the display screen in a markup language.

[0015] In one embodiment of the present invention, the markup language includes extensible markup language (XML) or hypertext transport protocol (HTTP).

[0016] In one embodiment of the present invention, a set of standard graphical representations of appliance-control mechanisms is stored in the remote control to choose for display to the user by the appliance.

[0017] In one embodiment of the present invention, the set of graphical representations of appliance-control mechanisms is stored in the appliance and can be sent over the wireless communications link to the remote control for display to the user.

[0018] In one embodiment of the present invention, the appliance includes a plurality of appliances.

[0019] In one embodiment of the present invention, the plurality of appliances includes one or more of a television, a video tape player, a video disk player, a stereo, a home control system, and a computer system with remotely controllable software (for example: a DVD player, a CD player, an MP3 player, or slideshow presentation software). Note that this application is not restricted to only electronic appliances, but could also be used to control programs and functions that run on a computer system. For example, the remote control can be used to control DVD, CD or MP3 player software running on a computer.

[0020] One embodiment of the present invention provides a system that facilitates configuring a remote control to operate an appliance. The system operates by sending a request for a specification of a user interface from the remote control to the appliance. In response to the request, the system receives the specification for the user interface from

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