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(54) **A HOUSEHOLD APPLIANCE SYSTEM**
HAUSHALTSGERÄTESYSTEM
SYSTÈME D'APPAREIL ÉLECTROMÉNAGER

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Description

[0001] The present invention relates to a control method for using in a household appliance system comprising a dishwasher that can connect to a wireless local area network.

[0002] Today, there is a wireless local area network in almost every home. Wireless local area networks created by means of modems enable electronic devices, especially smartphones and computers, to connect to the Internet. There are also household appliances that can connect to the wireless local area network in the house by means of a card provided thereon. Thus, the household appliances can be controlled by the user by means of electronic devices such as smartphones and tablets that are suitable for installing applications. By means of the application, the user can select the functions of the household appliances, transfer the selected programs and functions to the household appliance and get the information related to the operational status of the household appliance as notifications via the electronic device he/she uses. In the dishwashers with Internet access, after the dishes are loaded, the user can start the dishwasher, choose washing programs and receive notifications related to the problems that may occur. In order to operate the dishwasher, using the application, the user specifies parameters such as the type and amount of load, the detergent type, etc. To increase the washing performance in dishwashers, it is important to select the washing program that is suitable for the type of the load and the dirt. Washing and drying problems may occur when a suitable washing program is not selected.

[0003] In the state of the art German Patent Application No. DE102015102694, a dishwasher comprising a camera is disclosed. German Patent Application No. DE102011087274 discloses techniques of controlling smart domestic appliances, wherein appropriate treatment steps are selected by analysing images of materials to be treated taken by the external device. German Patent Application No. DE102012223243 discloses a device arrangement for determining a cleaning instruction of a household appliance by using a mobile terminal.

[0004] The aim of the present invention is the realization of a method for controlling a household appliance system comprising a dishwasher, wherein the type of the load and the dirt is automatically detected.

[0005] The control method of the present invention is defined in independent claim 1. Particular embodiments are set out in the dependent claims.

[0006] The control method of the present invention comprises the steps of recording the image of the items placed into the dishwasher by means of the mobile device and processing of the recorded image by the server.

[0007] The control method of the present invention comprises the step of comparing the image with the load types prerecorded in the server memory. The material types are prerecorded into the server memory by the producer. When the image is transferred to the server, the

said values are compared and the load type is determined.

[0008] The control method of the present invention comprises the steps of selecting the washing program suitable for the load type by the server and sending the information to the control card. Thereby, the washing program that suits the load type best is determined automatically.

[0009] The control method of the present invention comprises the step of offering layout options to the user. The image is compared with the ideal layouts provided in the server memory. After the comparison, the user is provided with layout suggestions via the mobile device.

[0010] The control method of the present invention comprises the steps of comparing the ideal load with the image and warning the user when an overload is detected. The image is compared with the ideal load recorded in the server memory. The user is warned when it is detected that the load exceeds the ideal amount.

[0011] The control method of the present invention comprises the step of taking the picture of the frequently used load type by means of the mobile device and recording the same to the server memory.

[0012] The control method of the present invention is suitable for use in the household appliance system comprising the server optimizing the dirt types according to the usage frequency.

[0013] The household appliance system realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the schematic view of the household appliance system.

Figure 2 - is the schematic view of the network card and the control card.

[0014] The elements illustrated in the figures are numbered as follows:

- 1- Household appliance system
- 2- Dishwasher
- 3- Network card
- 4- Control card
- 5- Mobile device
- 6- Server

[0015] The control method is suitable for use in a household appliance system (1) comprising a dishwasher (2), a network card (3) that is provided on the dishwasher (2) and that enables the dishwasher (2) to connect to the Internet, a control card (4) that is in communication with the network card (3) and that controls the dishwasher (2) programs, a mobile device (5) that can

control the dishwasher (2) by accessing the dishwasher (2) via the Internet and a server (6) in communication with the mobile device (5) and/or the network card (3), the control method comprising the steps of recording the image of the items placed into the dishwasher (2) to be washed by means of the mobile device (5), sending the recorded image to the server (6) by the mobile device (5) and processing the image, comparing the ideal layouts prerecorded into the server (6) memory with the image sent by the mobile device (5) and providing the user with the layout suggestion via the mobile device (5).

[0016] The dishwasher (2) can access to the Internet via the network card (3). The network card (3) and the control card (4) can communicate via a cable connection. The network card (3) transmits the commands received from the mobile device (5) or the server (6) to the control card (4). Thereby, the dishwasher (2) can be controlled. The user takes a picture of the items to be washed by means of the mobile device (5) after placing the same into the dishwasher (2). The recorded image is sent to the server (6) and processed by the server (6). The image is compared with the ideal layout alternatives. When a layout that is not suitable is detected, the user is warned and a layout suggestion is provided. Thereby, the items to be washed are enabled to be placed in a way that provides the best washing performance (Figure 1, Figure 2).

[0017] In an embodiment of the present invention, the control method comprises the steps of comparing the image with the prerecorded load types in the server (6) memory and determining the type of the load to be washed. The load types and the parameters related to the load types are predefined in the server (6) memory by the producer. Using the image, the load types are defined by determining the parameters such as brightness, opacity and color. Thereby, the washing performance is increased by selecting the washing program that is suitable for the load type.

[0018] In an embodiment of the present invention, the control method comprises the steps of selecting the washing program suitable for the load type and the dirt type defined by the user by the server (6) and sending the information to the control card (4). After the load type is determined by the server (6), the user specifies the dirt type. Using both the load type and the dirt type, the suitable washing program is determined by the server (6) and the information is sent to the control card (4) via the network card (3).

[0019] In an embodiment of the present invention, the control method of comprises the steps of comparing the ideal load related to the washing programs prerecorded in the server (6) with the image and warning the user when an overload is detected. Excessive load is detected using the image and the user is warned. On the image, the items to be removed is shown to the user. Thereby, the washing is performed with the ideal load, and the washing and drying performances are increased.

[0020] In an embodiment of the present invention, the

control method comprises the steps of specifying the frequently used load types by the user and recording the data into the server (6) memory. The load types that are not included in the server (6) and that cannot be defined can be defined by the user. The frequently used load types can be determined via the mobile device (5).

[0021] In an embodiment of the present invention, the control method is suitable to be used in the household appliance system (1) comprising the server (6) that enables the load types to be optimized according to the usage habits. The dirt types selected by the user are determined according to the selection frequency and automatically assigned as the suggestion of the dirt types that are most frequently selected by the user.

[0022] By means of the control method of the present invention, parameters such as load type, layout suitability and overload are determined by the server (6) and the suitable washing program is selected.

Claims

1. A control method that is suitable for use in a household appliance system (1) comprising a dishwasher (2), a network card (3) that is provided on the dishwasher (2) and that enables the dishwasher (2) to connect to the Internet, a control card (4) that is in communication with the network card (3) and that controls the dishwasher (2) programs, a mobile device (5) that can control the dishwasher (2) by accessing the dishwasher (2) via the Internet and a server (6) in communication with the mobile device (5) and/or the network card (3), the control method comprising the steps of
 - recording the image of the items placed into the dishwasher (2) to be washed by means of the mobile device (5), and
 - sending the recorded image to the server (6) by the mobile device (5) and processing the image; **characterized in that** the control method further comprises
 - comparing the ideal layouts prerecorded into the server (6) memory with the image sent by the mobile device (5), and
 - providing the user with the layout suggestion via the mobile device (5).
2. A control method as in Claim 1, comprising the steps of comparing the image with the prerecorded load types in the server (6) memory and determining the type of the load to be washed.
3. A control method as in claim 2, wherein determining the type of the load to be washed comprises determining parameters such as brightness, opacity and color in the image, and comparing said parameters to respective parameters associated with prerecord-

ed load types in the server (6).

4. A control method as in any one of the above claims, comprising the steps of selecting the washing program suitable for the load type and the dirt type defined by the user by the server (6) and sending the information to the control card (4).
5. A control method as in any one of the above claims, comprising the steps of comparing the ideal load related to the washing programs prerecorded in the server (6) with the image and warning the user when an overload is detected.
6. A control method as in claim 5, further comprising showing to the user, on the image, items to be removed.
7. A control method as in any one of the above claims, comprising the steps of specifying the frequently used load types by the user and recording into the server (6) memory.
8. A control method as in any one of the above claims, that is suitable to be used in the household appliance system (1) comprising the server (6) that enables the load types to be optimized according to the usage habits.

Patentansprüche

1. Ein Steuerverfahren, das für die Verwendung in einem Haushaltsgerätesystem (1) geeignet ist, das eine Geschirrspülmaschine (2) und eine an der Geschirrspülmaschine (2) vorgesehene Netzwerkkarte (3) umfasst, die es der Geschirrspülmaschine (2) ermöglicht, sich mit dem Internet zu verbinden, eine Steuerkarte (4), die mit der Netzwerkkarte (3) in Verbindung steht und die Programme der Geschirrspülmaschine (2) steuert, ein mobiles Gerät (5), das die Geschirrspülmaschine (2) durch Zugriff auf die Geschirrspülmaschine (2) über das Internet und einen Server (6) in Kommunikation mit dem mobilen Gerät (5) und/oder der Netzwerkkarte (3) steuern kann, wobei das Steuerverfahren folgende Schritte umfasst:

- die Aufnahme der Ansicht, der in die Geschirrspülmaschine (2) eingebrachten zu spülenden Gegenständen mit dem mobilen Gerät (5), und
- das Senden des aufgezeichneten Ansichtes an den Server (6) durch das mobile Gerät (5) und Verarbeiten des Bildes; gekennzeichnet ist das Steuerverfahren darüber Hinaus durch
- das Vergleichen der idealen Layouts, die im Speicher des Servers (6) vorab aufgezeichnet wurden, mit dem vom Mobilgerät (5) gesende-

ten Ansicht, und

- das Bereitstellen des Layout-Vorschlags für den Benutzer über das mobile Gerät (5).

2. Ein Steuerverfahren, wie in Anspruch 1 aufgeführt, umfasst den Schritt des Vergleichens der Ansicht mit den im Voraus aufgezeichneten Beladungstypen im Speicher des Servers (6) und das Bestimmen des Typs der zu waschenden Spülgegenstände.
3. Ein Steuerverfahren, wie in Anspruch 2 aufgeführt, wobei das Bestimmen des Typs der zu waschenden Gegenstände zu gleich Parameter wie Helligkeit, Opazität und Farbe bestimmt, die in dem Bild und das Vergleichen der Parameter mit jeweiligen Parametern umfassend sind, die im Server (6) vorab aufgezeichneten Wäschearten zugeordnet sind.
4. Ein Steuerverfahren, wie in einem der vorherigen Ansprüchen aufgeführt, umfasst die Schritte des Auswählens des Waschprogramms, das für die Beladungsart und die Schmutzart geeignet ist, die vom Benutzer durch den Server (6) definiert und die Informationen an die Kontrollkarte (4) sendet.
5. Ein Steuerverfahren, wie in einem der vorherigen Ansprüchen aufgeführt, umfasst die Schritte der Vergleichung der idealen Beladung in Bezug auf die im Server (6) vorab aufgezeichneten Waschprogramme mit der Ansicht und des Warnens des Benutzers, wenn eine Überlastung festgestellt wird.
6. Ein Steuerverfahren, wie in Anspruch 1 aufgeführt, umfasst des Weiteren das Zeigen von zu entfernenden Elementen für den Benutzer auf der Ansicht.
7. Ein Steuerverfahren, wie in einem der vorherigen Ansprüchen aufgeführt, umfasst die Schritte des Spezifizierens der häufig verwendeten Lasttypen durch den Benutzer und des Aufzeichnens in den Speicher des Servers (6).
8. Ein Steuerverfahren, wie in einem der vorherigen Ansprüchen aufgeführt, ist geeignet für die Verwendung in einem Haushaltsgerätesystem (1), das den Server (6) umfasst, der eine Optimierung der Lasttypen gemäß den Nutzungsgewohnheiten ermöglicht.

Revendications

1. Un procédé de commande qui est approprié pour être utilisé dans un système d'appareils ménagers (1) comprenant un lave-vaisselle (2), une carte réseau (3) qui est prévue sur le lave-vaisselle (2) et qui permet au lave-vaisselle (2) de se connecter à l'Internet, une carte de commande (4) qui est en com-

munication avec la carte réseau (3) et qui commande les programmes du lave-vaisselle (2), un appareil mobile (5) qui peut commander le lave-vaisselle (2) en accédant au lave-vaisselle (2) via Internet et un serveur (6) en communication avec le dispositif mobile (5) et/ou la carte réseau (3), le procédé de commande comprenant les étapes suivantes

- enregistrer l'image des articles placés dans le lave-vaisselle (2) pour être lavés au moyen de l'appareil mobile (5), et
- envoyer l'image enregistrée au serveur (6) par l'appareil mobile (5) et traiter l'image ; est **caractérisé en ce que** le procédé de commande comprend en outre les étapes suivantes
- comparer les dispositions idéales préenregistrées dans la mémoire du serveur (6) avec l'image envoyée par l'appareil mobile (5), et
- fournir à l'utilisateur la suggestion de mise en page via l'appareil mobile (5).

2. Un procédé de commande selon la déclaration 1, comprenant les étapes consistant à comparer l'image avec les types de charge préenregistrés dans la mémoire du serveur (6) et à déterminer le type de la charge à laver.
3. Un procédé de commande selon la déclaration 2, dans lequel la détermination du type de la charge à laver comprend la détermination de paramètres tels que la luminosité, l'opacité et la couleur dans l'image, et la comparaison desdits paramètres aux paramètres respectifs associés aux types de charge préenregistrés dans le serveur (6).
4. Un procédé de commande selon l'une quelconque des déclarations précédentes, comprenant les étapes de sélection du programme de lavage adapté au type de charge et au type de salissure définis par l'utilisateur dans le serveur (6) et d'envoi de l'information à la carte de commande (4).
5. Un procédé de commande selon l'une quelconque des déclarations précédentes, comprenant les étapes consistant à comparer la charge idéale liée aux programmes de lavage préenregistrés dans le serveur (6) avec l'image et à avertir l'utilisateur lorsqu'une surcharge est détectée.
6. Un procédé de commande selon la déclaration 5, comprenant en outre la présentation à l'utilisateur, sur l'image, d'éléments à retirer.
7. Un procédé de commande selon l'une quelconque des déclarations précédentes, comprenant les étapes consistant à spécifier les types de charge fréquemment utilisés par l'utilisateur et à les enregistrer dans la mémoire du serveur (6).
8. Un procédé de commande selon l'une quelconque des déclarations précédentes, qui est approprié pour être utilisé dans le système d'appareils ménagers (1) comprenant le serveur (6) qui permet d'optimiser les types de charge en fonction des habitudes d'utilisation.

Figure 1

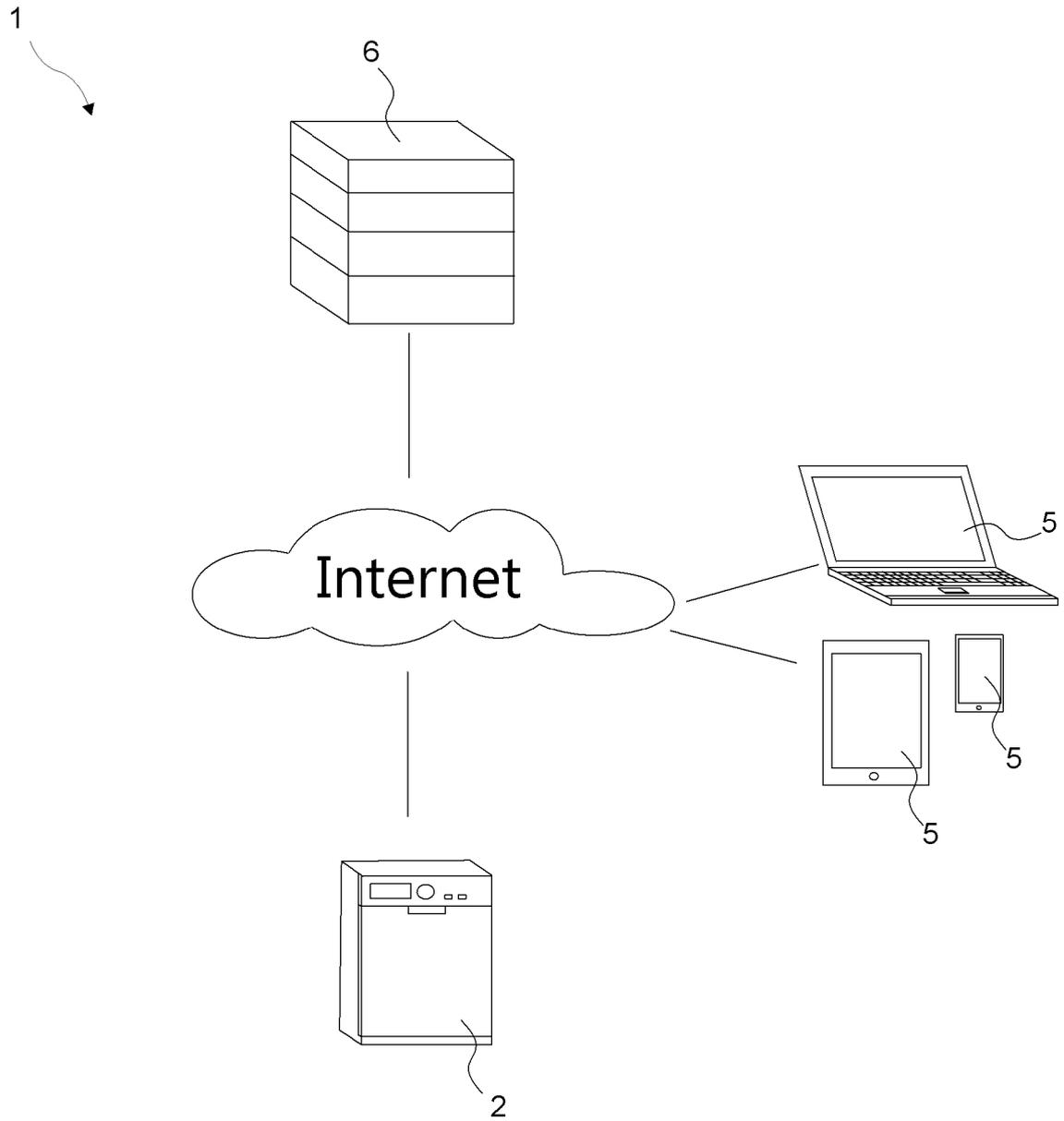
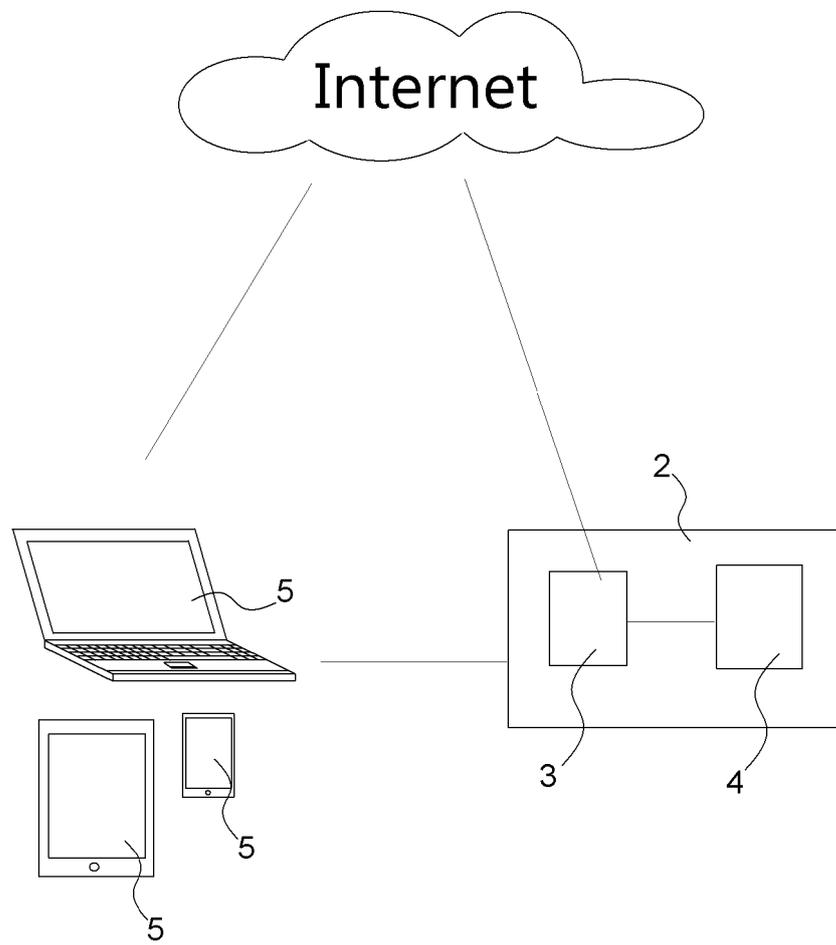


Figure 2



REFERENCES CITED IN THE DESCRIPTION

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