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SMART APPLIANCE SYSTEM

ABSTRACT

The invention describes a smart appliance system. The system receives instructions from a user over a network to control an appliance. The system then transmits these instructions to the appliance to control the appliance. The system causes the appliance to operate according to the transmitted instructions.

PROBLEM STATEMENT

Traditional appliances such as ovens, stoves, refrigerators, and washing machines are controlled via physical controls on the appliances. Operation of these appliances require the user to be in physical proximity. Because these appliances do not allow for remote operation,, appliances left unattended may lead to accidents such as cooking fires and other safety hazards. Additionally, with the multitude of appliance manufacturers and appliance models, there is no standardized user interface to operate and control the appliances. Therefore, users can find operating appliances to be confusing and unintuitive. They can be especially inaccessible to visually impaired individuals who may have difficulty safely and independently operating the appliances. A system that employs a standard console to remotely control an appliance is described below.

DETAILED DESCRIPTION

The systems and techniques described here relate to a smart appliance system that controls appliances connected over a network. The system can be implemented for use in an Internet, an intranet, or another client and server environment. The system can be implemented

as program instructions locally installed on a client device or implemented across a client device and server environment. The client device can be any electronic device including appliances such as a microwaves, ovens, toasters, stoves, washing machines, etc that can be communicatively coupled to the network.

Fig. 1 illustrates an example method 100 for controlling an appliance connected over a network. The method can be performed by the smart appliance system.

The smart appliance system receives instructions from a user over a network to control an appliance (102). The instructions are may be transmitted via a client device controlled by a user to control the appliance. The instructions can include one or more parameters or conditions in which the appliance is to operate under. For example, the instructions may include operating the appliance at a particular temperature or power setting for a specific period of time, switching the appliance on/off, turning the lights of the appliance on/off, etc. The system may, e.g., receive cooking instructions to cook a food item placed inside the oven. Such instructions may include, switching on the oven, setting the temperature of the oven to 300 degrees for ten minutes, and setting the oven timer, etc.

The system then transmits the received instructions to the appliance to control the appliance (104). The system may transmit the received instructions to the appliance through a standard console. The standard console can be retrofitted onto existing appliances to control the physical controls of the appliance. The console has built-in network capabilities with which it can receive the instructions from the system. For example, the console can connect to a WiFi network and the system can pass instructions received from the user's client device to the console over the WiFi network. In response to receiving the instructions from the system, the

standard console can actuate the appropriate appliance controls so the appliance operates in the same parameters and conditions as defined by the instructions. For example, the standard console actuates the appropriate oven controls to heat up the oven to 300 degrees for ten minutes, after which the standard console actuates the oven controls to turn off the oven.

Additionally, the system can also receive information from the appliance through the standard console. The appliance can be fitted with different sensors, e.g., weight sensitive sensor plates, infrared sensors, motion sensors, or built-in cameras. These sensors can detect conditions inside the appliance, e.g., while cooking food items, and accordingly communicate the information to the standard console which in turn transmits the information to the system. For example, an oven can have an built-in heat resistant camera. The system can receive a live feed of the food cooking inside the oven from the oven. The system can provide the information received from the appliance to the user. For example, the system can transmit the received feed of the cooking food to the user's client device.

The system can also implement various safety features. For example, the system can identify a cooking fire based on the images received from the camera in an oven. The system may subsequently instruct the oven to turn off and may send an alert to the user.

Fig. 2 illustrates a microwave oven 202 retrofitted with a standard console 204 over the oven's physical controls. The standard console includes a display and acts as the communicative link between the smart appliance system and the oven. The oven is also retrofitted with a heat resistant camera 206. As depicted, the oven can receive instructions and transmit information to the smart appliance system through the standard console 204, which is communicatively coupled to the smart appliance system through a WiFi network. The system receives appliance control

instructions from a user 208 to increase the temperature of the oven. Other instructions may include changing the timer settings of the oven, changing the oven power (watts), etc. The instructions are received from a remote user connected to the smart appliance system, e.g., through the internet. The user may send these instructions using its client device such as a smartphone. The system transmits the received instructions to the standard console. The standard console subsequently actuates the physical controls of the appliance based on the received instructions. The appliance accordingly cooks the food item with the parameters and conditions defined by the user's instructions.

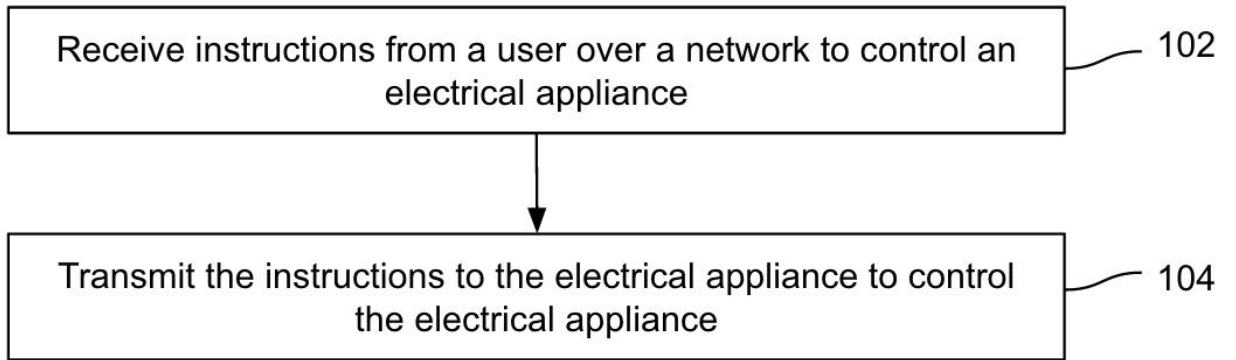
Fig. 3 depicts an example graphical user interface (GUI) of a smart appliance system application running on a user's client device, e.g., a smartphone 302. As depicted, the user transmit instructions to control an oven. The user can turn the oven on/off via soft button 304, set the oven power soft button 306, control the oven temperature via soft button 308, reset the oven times via soft button 310, and monitor the live feed of the cooking process inside the oven via soft button 312.

Fig. 4 is a block diagram of an exemplary environment that shows components of a system for implementing the techniques described in this disclosure. The environment includes client devices 410, servers 430, and network 440. Network 440 connects client devices 410 to servers 430. Client device 410 is an electronic device. Client device 410 may be capable of requesting and receiving data/communications over network 440. Example client devices 410 are personal computers (e.g., laptops), mobile communication devices, (e.g. smartphones, tablet computing devices), set-top boxes, game-consoles, embedded systems. The other devices 410' that can send and receive data/communications over network 440 may include smart appliances

such as coolers, refrigerators, cold storages, chillers, ovens, stoves, microwaves, or any other home appliances. Client device 410 may execute an application, such as a web browser 412 or 414 or a native application 416. Web applications 413 and 415 may be displayed via a web browser 412 or 414. Server 430 may be a web server capable of sending, receiving and storing web pages 432. Web page(s) 432 may be stored on or accessible via server 430. Web page(s) 432 may be associated with web application 413 or 415 and accessed using a web browser, e.g., 412. When accessed, webpage(s) 432 may be transmitted and displayed on a client device, e.g., 410 or 410'. Resources 418 and 418' are resources available to the client device 410 and/or applications thereon, or server(s) 430 and/or web pages(s) accessible therefrom, respectively. Resources 418' may be, for example, memory or storage resources; a text, image, video, audio, JavaScript, CSS, or other file or object; or other relevant resources. Network 440 may be any network or combination of networks that can carry data communication.

The subject matter described in this disclosure can be implemented in software and/or hardware (for example, computers, circuits, or processors). The subject matter can be implemented on a single device or across multiple devices (for example, a client device and a server device). Devices implementing the subject matter can be connected through a wired and/or wireless network. Such devices can receive inputs from a user (for example, from a mouse, keyboard, or touchscreen) and produce an output to a user (for example, through a display). Specific examples disclosed are provided for illustrative purposes and do not limit the scope of the disclosure.

DRAWINGS



100

Fig. 1

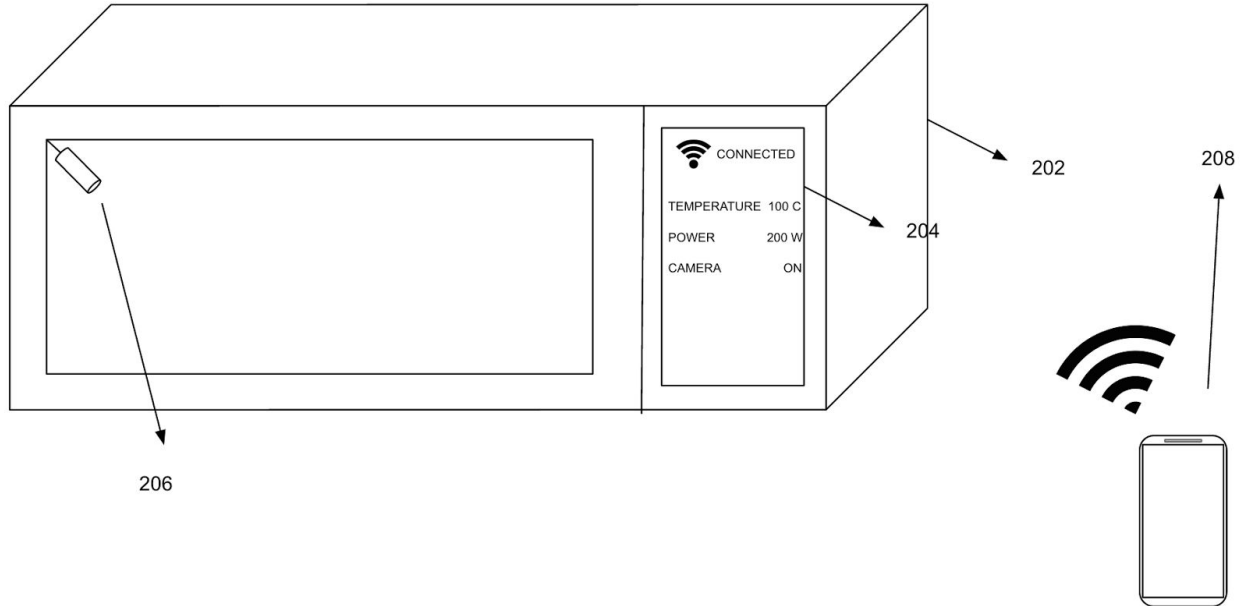


Fig. 2

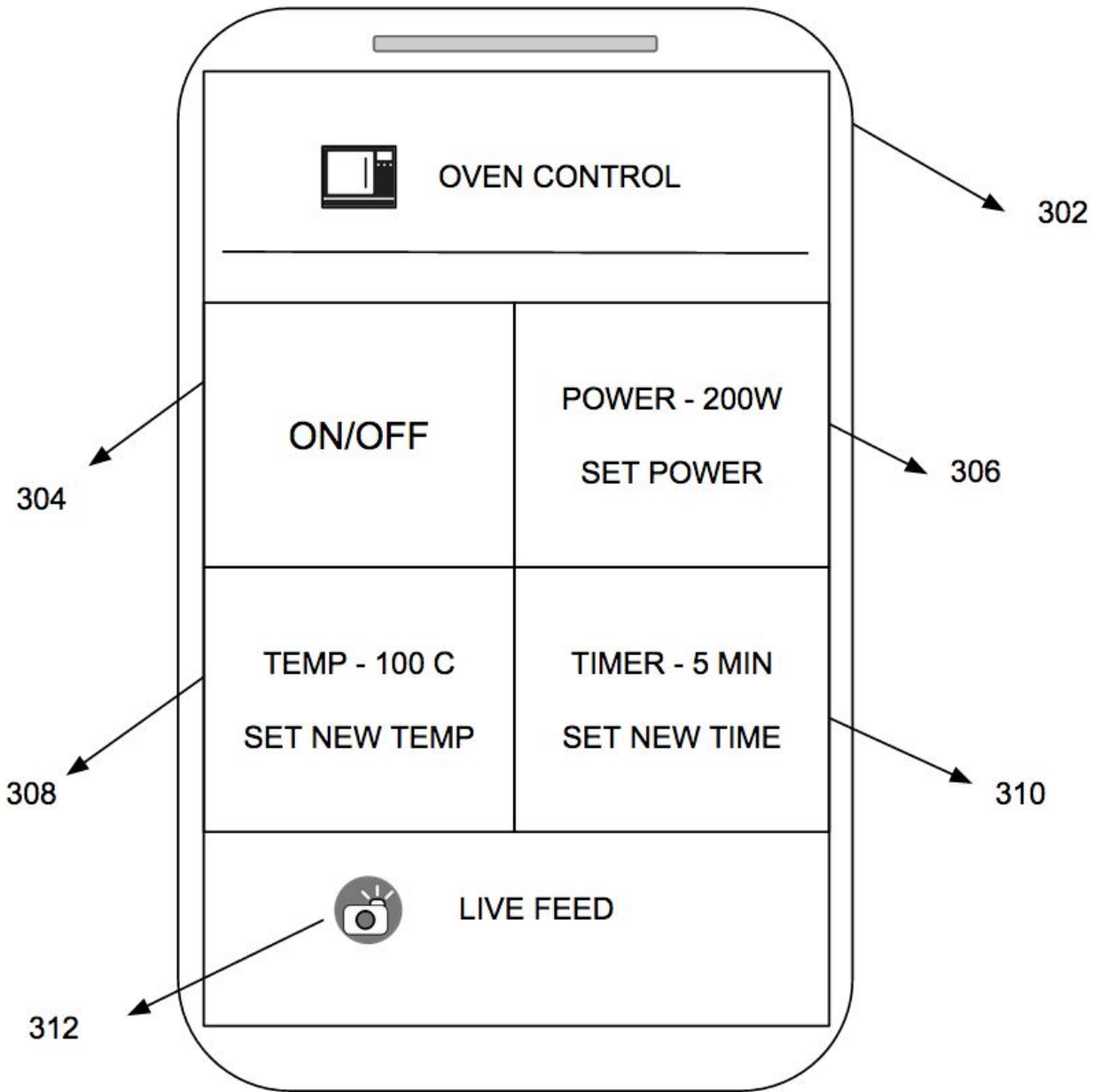


Fig. 3

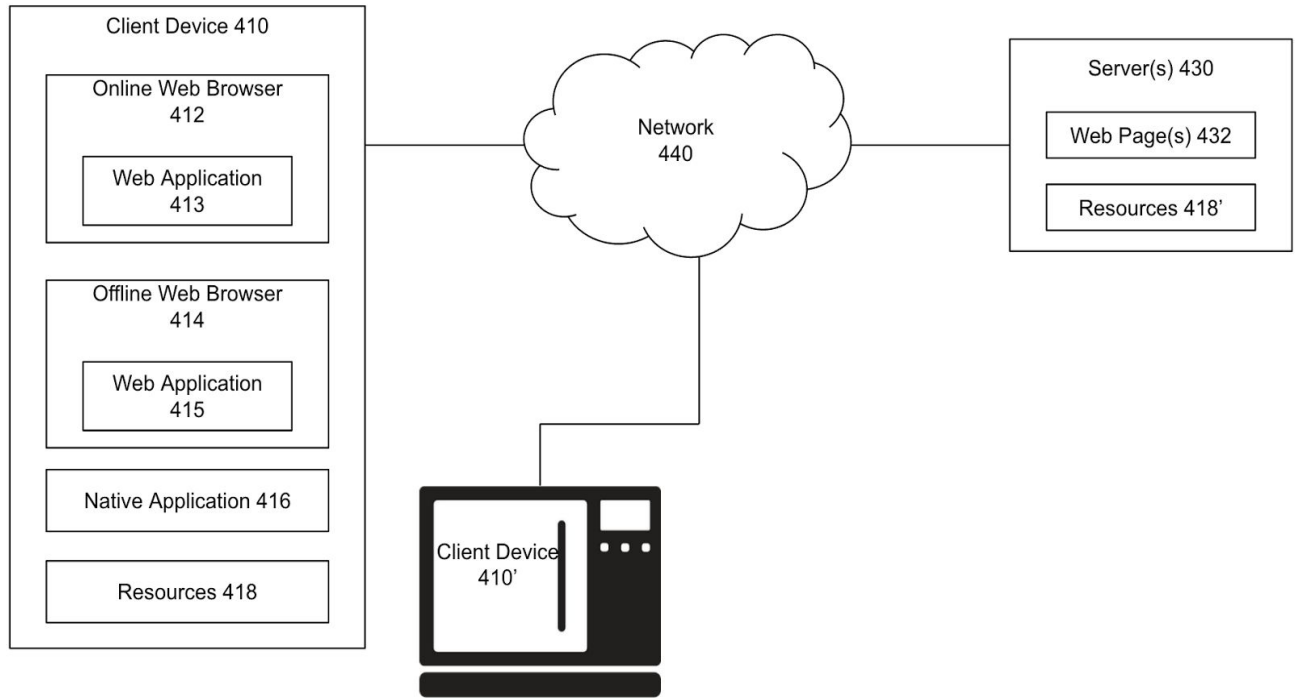


Fig. 4