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VIRTUAL DOOR KNOCK NOTIFICATIONS

Daniel Klein

Dean Jackson

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VIRTUAL DOOR KNOCK NOTIFICATIONS

ABSTRACT

A virtual door knock notification system notifies a user when a visitor arrives at a user's address or a person associated with a service arrives at the user's address to deliver the service. The service may include, e.g., a meter reading service or a package delivery service. The virtual door knock notification system first determines a location of the visitor or the service person. The system then retrieves an address of the user. Accordingly, the system provides a notification to the user when the determined location of the visitor or the service person is in close proximity to the address of the user. The notification acts as a virtual "door knock" for the user.

PROBLEM STATEMENT

Service providers, such as package delivery personnel, may arrive at a user's address to deliver a package at a time when the user may not be available at the address. Moreover, the users of these services may spend significant time waiting for these services to arrive at their addresses. For example, a user may remain on the look out for his/her package delivery throughout the day and might still miss the delivery person in case he/she has to leave for a brief period of time. In other cases, the user may not be in a position to receive the service person immediately. For example, the user may be in shower or may be in his/her backyard. There might be situations where a user's doorbell might be broken, making it difficult for the service person, such as package delivery personnel or meter reader, to notify the user about the service. This can be a frustrating and inconvenient experience for people that frequently rely on such services. In another scenario, the user might be expecting a visit from an acquaintance and might

miss the meeting because of abovementioned reasons. Thus, there exists a need for an improved system and method of notifying users when a visitor or a service person arrives at the users' address.

VIRTUAL DOOR KNOCK NOTIFICATION SYSTEM

The systems and techniques described here relate to a virtual door knock notification system that notifies a user when a visitor or a service person arrives at the user's address. The system can be implemented for use in an internet, an intranet, or another client and server environment. The client device can be any electronic device, e.g., a smartphone, laptop, mobile phone, desktop computer, tablet, electronic wearable device, PDA etc. The virtual door knock notification system can be locally installed on the electronic device or can be a web-based application or service. For example, it can be a functionality implemented at a cloud, a server, or a remote memory location.

Fig. 1 illustrates an example method 100 for presenting notifications to a user on his electronic device about an arrival or impending of a visitor or a service person at the user's address. The method can be performed by the virtual door knock notification system.

The system first determines a location of a visitor or a service person (102). The service can include a package delivery service, household electricity meter reading service, household gas meter reading service, etc. The service person can be, e.g., a package delivery person, household electricity/gas meter reader, etc. The system can determine the location of the service person or the visitor via communication devices available with them, e.g. a smartphone, a wearable electronic device. The system can receive the geographical location via GPS sensors

embedded in the visitor's or service person's electronic communication device. Other devices used for determining the geographical location can be a GPS tracker embedded in service person's or visitor's vehicle. In case of service deliveries, the service person may register themselves with the notification system which can keep a track of his/her location.

The system then retrieves an address of a user (104). The user can register their address while subscribing to the service for the first time or when requesting the service. For example, the user may provide its address to a package delivery service while placing an order. The system can retrieve this address from the service provider's database. In another example, the user may utilize or place an order for the service through his/her social networking account. In this case, the system can retrieve the address from the user's social networking page with explicit user permission. In another example, the user may register visitors that they expect to arrive at their address within a certain time period (e.g., for a party). The system may access the user's address during the visitor registration process.

Thereafter, the virtual door knock notification system causes a notification to be provided to the user when the determined location of the visitor or service person is within a threshold proximity to the address of the user (106). The system compares the current location of the visitor or the service person with that of the retrieved user address. In an example implementation, the system may determine the visitor or the service person is within a threshold proximity to the user if their location is within a preset radius from the user's address. This preset radius, e.g., 0.5 mile, can be automatically set by the system, or manually set by the user or by the system administrator.

These notifications can be provided to the user on his/her electronic communication device. The notification can act as a virtual “door knock” to signal the user that the visitor or the service person is about to arrive at the user’s address. The virtual “door knock” provided to a user may also include a name of the visitor or the service person in order to confirm the identity of the visitor or the service person to the user and provide an additional security layer. Additionally, the door knock notifications can be delivered to multiple users as well. For example, the system can cause the notification to be delivered to all the residents of the retrieved address instead of only the primary resident/user who may have ordered the service.

The automatic door knock notification system can also provide additional options to a user of a service. These options can be provided to the user when they initially set-up the notification service. For example, users can specify additional users who must be also be notified about the proximity of arrival of a visitor or a service person at their address. Other user options can include the ability for users to set-up selective notifications. For example, a user can set-up the notifications so that he only receives notifications about the arrival of the service person when he is not available at the address himself. This allows the user to be notified when the delivery package has been left on their doorstep when they were not at their address. The system may determine the user’s current location via user’s electronic communication device using known techniques. Additionally, the system may ask for the user’s permission in order to access his current location. In other notification options, the user can also temporarily pause or mute notifications related to particular types of services. For example, the user can set-up the system so that he is notified of package delivery services but not utility services.

Additionally, the system may provide notifications to resolve ambiguous addresses of users of the service. For example, the service person from a package delivery service may have an ambiguous multi-unit address for the user and may not have the exact unit where he/she is to deliver the service. To solve the ambiguity of the user's address, the system may access publicly available information, such as census data, tax records, maps information, etc. to determine the exact unit address for the user in the multi-unit address. When the system detects that the service person is in close proximity to the user's address, the system may notify the service person of the exact unit address, e.g., Apartment #3.

Additionally, in order to resolve ambiguous addresses, the system can deliver a photograph of the user's front door in the notification to a visitor or a service person. The system may retrieve these photographs from publicly available street level photographs taken by mapping services or the user's social network with explicit user permission. Alternatively, ambiguous addresses can be resolved via short range communication technology such as Near field communication (NFC). A NFC tag can be placed at the user's door. The notification system can notify the visitor or the service person when it detects their electronic device in close proximity to the placed NFC tag. Similarly, instead of a NFC tag, a QR code or bar code can also be placed at user's physical address. When the service person scans the barcode, the system notifies the person with the exact apartment number and/or photograph of the front door of the user in order to confirm the address. Alternatively, the system may allow the visitor or delivery person to take a photograph of the front door or other identifying location of the address. The system can compare this photograph with a known photograph of the same address to confirm the presence of the visitor or delivery person at that address.

Fig. 2 illustrates an example graphical user interface (GUI) of a notification 204 transmitted to a user's electronic communication device 202. The notification is provided on the electronic device when the system detects that a service person is in close proximity to the user's address. As depicted, the notification includes a message, "Jon from Express delivery is 0.5 mile away," signalling that the user's package delivery is about to arrive at his address. As depicted, the notification also includes a name of the service person.

Fig. 3 illustrates another example GUI of a notification 304 arriving on a service person's electronic communication device 302. The notification 304 is provided when an ambiguous address is resolved for the service person. For example, as depicted, the service person is notified about the exact apartment number, where the package is to be delivered.

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, and other devices 410' that can send and receive data/communications over network 440. 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

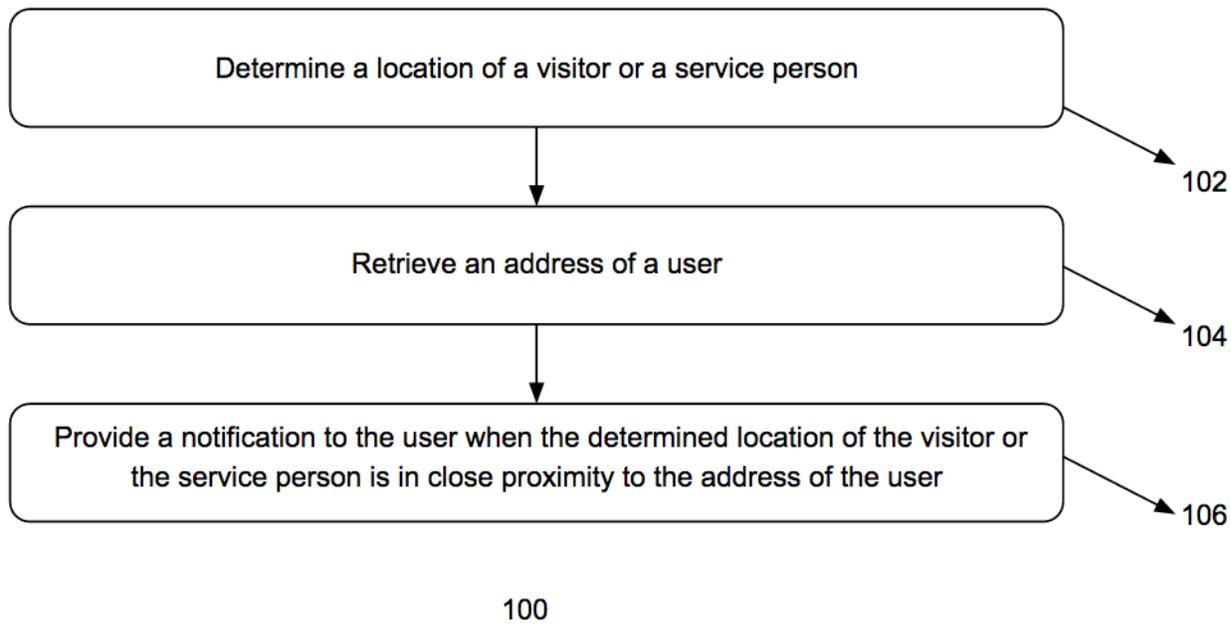


Fig. 1

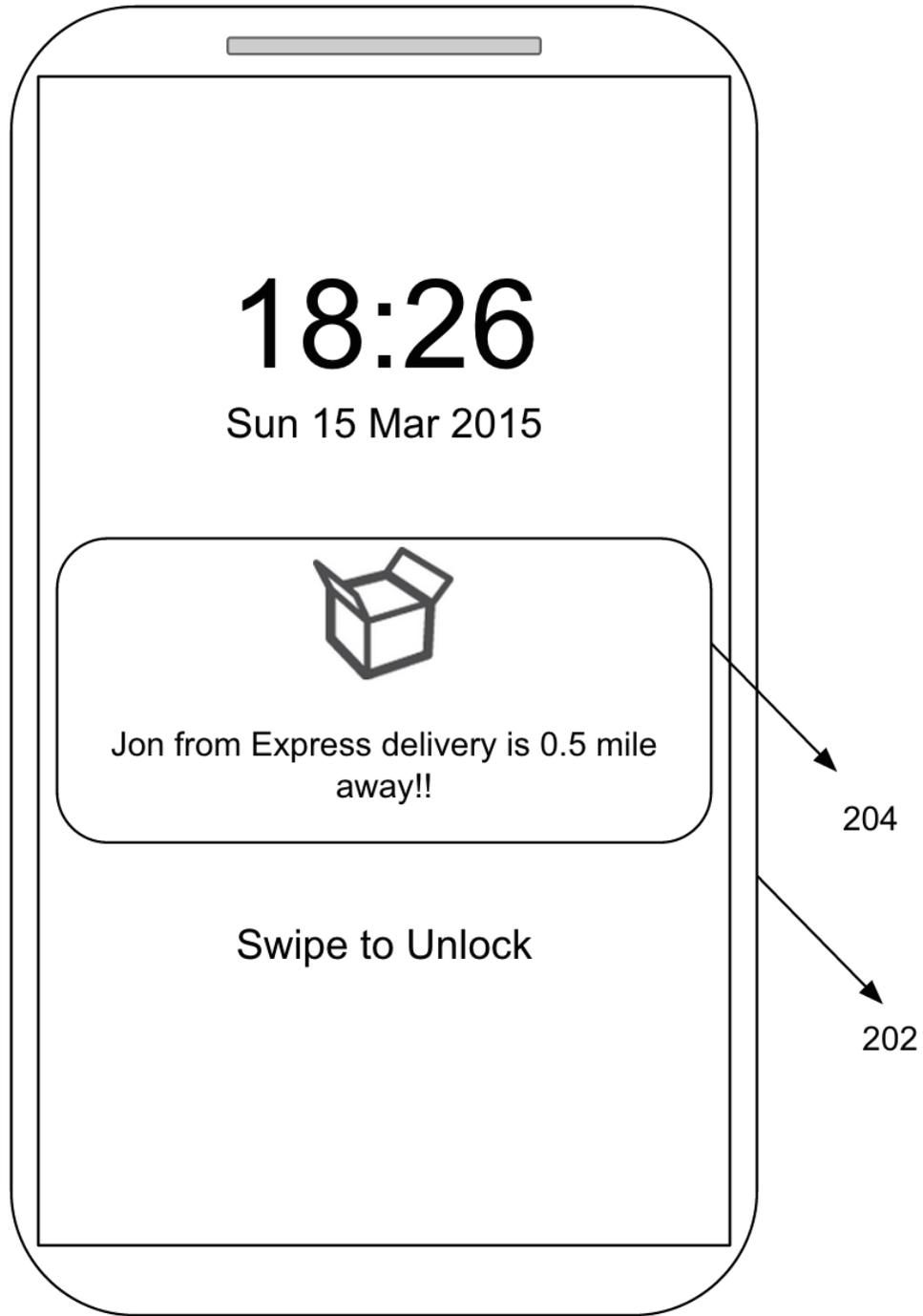


Fig. 2

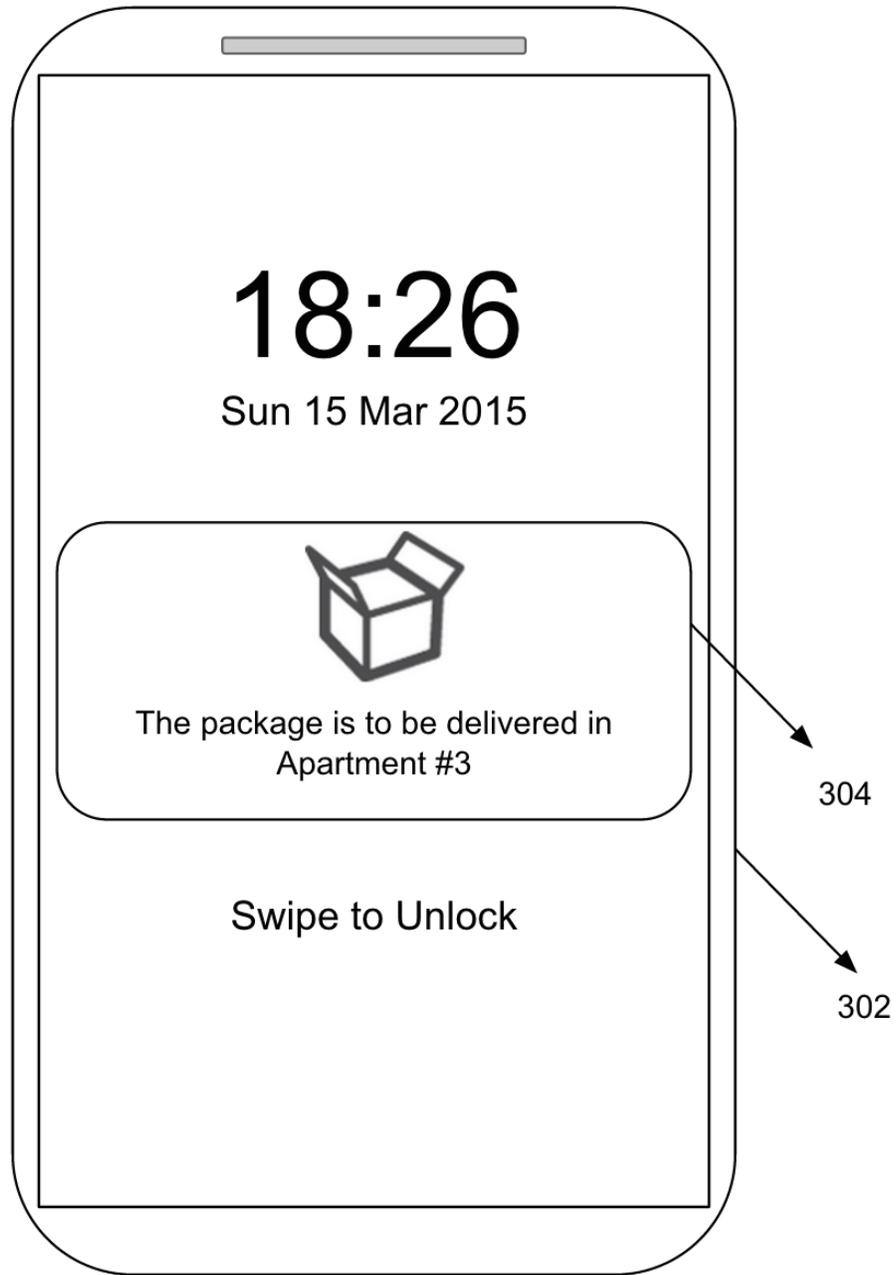


Fig. 3

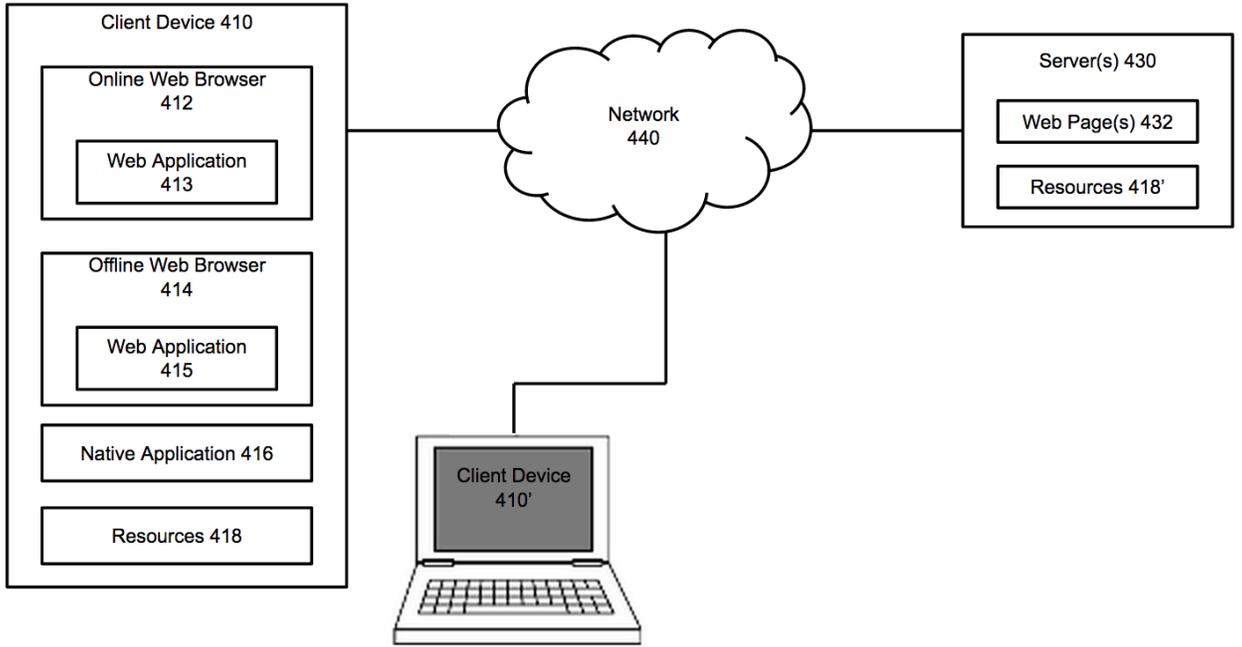


Fig. 4