

METHOD AND APPARATUS FOR INVOKING FUNCTION IN APPLICATION

[0001] This application claims priority to Chinese Patent Application No. 201610012075.0, filed on January 8, 2016 and entitled "METHOD AND
5 APPARATUS FOR INVOKING FUNCTION IN APPLICATION", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present application relates to the field of information processing technologies, and in particular, to a method and an apparatus for invoking a function
10 in an application.

BACKGROUND

[0003] A feature of smart devices such as mobile phones, tablet computers, and smart watches is that the users can customize and install a wide variety of applications, so that the device functionalities can be expanded. With the development of smart
15 devices, the functions of various applications become more powerful. Even a plurality of functions have been integrated in many applications to meet the various needs of users.

[0004] One problem that the integration of functions in applications may bring is the complexity of user operations. At present, when a user uses a smart device such as
20 a mobile phone to invoke a function in an application, a typical operation process is as follows: the user takes out the mobile phone → wakes the mobile phone → unlocks the mobile phone → identifies the APP you want to use → runs the APP → jumps to the required function sub-interface (via menus, buttons, etc.) → performs related operations on the sub-interface. It can be seen that in actual application, the use of a
25 function in an application requires many steps to be implemented, which is not only inconvenient in operation but also consumes a lot of time for the user.

SUMMARY

[0005] In view of the foregoing technical problems, the present application provides a method and an apparatus for invoking a function in an application, and the technical solution is as follows:

5 **[0006]** According to a first aspect of the present application, a method for invoking a function in an application is provided. The method is applied to user equipment, and the method includes: obtaining an operation of a user on the user equipment; and invoking a function in an application associated with a predetermined user operation when the obtained operation matches the predetermined user operation.

10 **[0007]** According to a second aspect of the present application, a barcode payment method is provided. The method is applied to user equipment, and the method includes: obtaining an operation of a user on the user equipment; and invoking a payment barcode display interface in a payment application when the obtained operation matches a predetermined user operation, so as to display a barcode
15 image used for payment on a screen of the user equipment.

[0008] According to a third aspect of the present application, an apparatus for invoking a function in an application is provided. The apparatus is applied to user equipment, and the apparatus includes: a detection control module, configured to obtain an operation of a user on the user equipment; and an invocation control module,
20 configured to invoke a function in an application associated with a predetermined user operation when the obtained operation matches the predetermined user operation.

[0009] According to a fourth aspect of the present application, a barcode payment apparatus is provided. The apparatus is applied to user equipment, and the apparatus includes: a detection control module, configured to obtain an operation of a user on
25 the user equipment; and a payment barcode display control module, configured to invoke a payment barcode display interface in a payment application when the obtained operation matches a predetermined user operation, so as to display a barcode image used for payment on a screen of the user equipment.

[0010] According to the technical solutions provided in the present application, a
30 predetermined user operation is used as a trigger condition for invoking a function in an application, and an operation of a user is obtained. When the obtained operation matches the predetermined user operation, a particular function in a particular application is automatically invoked, thereby avoiding tedious operation steps such as

waking a device, unlocking a device, etc., and implementing quick invoking of a particular function in a particular application.

[0011] It should be understood that the foregoing general description and the following detailed description are merely exemplary and impose no limitation on the present application.

BRIEF DESCRIPTION OF DRAWINGS

[0012] To describe the technical solutions in the implementations of the present application or the existing technology more clearly, the following briefly describes the accompanying drawings required for describing the implementations or the existing technology. Apparently, the accompanying drawings in the following description show merely some implementations of the present application, and a person of ordinary skill in the art can still derive other drawings from these accompanying drawings.

[0013] FIG. 1 is a schematic flowchart illustrating a method for invoking a function in an application according to the present application;

[0014] FIG. 2 is a schematic diagram illustrating a first specific application scenario according to the solutions of the present application;

[0015] FIG. 3 is a schematic diagram illustrating a second specific application scenario according to the solutions of the present application;

[0016] FIG. 4 is a schematic diagram illustrating a third specific application scenario according to the solutions of the present application;

[0017] FIG. 5 is a schematic diagram illustrating a fourth specific application scenario according to the solutions of the present application;

[0018] FIG. 6 is a schematic structural diagram illustrating an apparatus for invoking a function in an application according to the present application;

[0019] FIG. 7 is a schematic structural diagram illustrating a two-dimensional code payment apparatus according to the present application;

[0020] FIG. 8 is a schematic structural diagram illustrating a device used to configure the apparatus provided in the present application.

DESCRIPTION OF EMBODIMENTS

[0021] To make a person skilled in the art understand the technical solutions in the present application better, the following describes in detail the technical solutions in the implementations of the present application with reference to the accompanying drawings in the implementations of the present application. Apparently, the described implementations are merely some rather than all of the implementations of the present application. All other implementations obtained by a person of ordinary skill in the art based on the implementations of the present application shall fall within the protection scope of the present application.

[0022] As shown in FIG. 1, FIG. 1 is a flowchart illustrating a method for invoking a function in an application according to the present application. The method can be executed by a mobile terminal, for example, a mobile phone. The method can specifically include the following steps.

[0023] S101. Obtain an operation of a user on user equipment.

[0024] S102. Invoke a function in an application associated with a predetermined user operation when the obtained operation matches the predetermined user operation.

[0025] The solution for invoking a function in an application according to the present application can be applied to user equipment provided with a sensing module, a button, and a touch input module. The sensing module can include a gravity sensor, an acceleration sensor, a gyroscope, a distance sensor, a fingerprint sensor, etc. The button can include a physical button or a virtual touch key on the user equipment, a virtual key in a touchscreen operating system interface or a specific application interface, etc. The user equipment can be a composite device such as a mobile phone, a tablet computer, and a smart watch, or a single function device such as an electronic business card, an electronic tag, etc., which is not limited in the present application.

[0026] In the present application, the invoking a function in an application can be a direct jump to display a certain functional interface in a specific application, such as a payment barcode display interface in a payment application, a chat interface with a specific user in an instant messaging application, etc. Alternatively, it can be directly triggering the execution of a specific function in a specific application, such as a play/pause/switch function in a media playing application, an information refresh function in an information type application, etc.

[0027] In the solution of the present application, a predetermined user operation

can be used as a method for quickly triggering a specific function in a specific application, to implement quick display of a specific function interface in a specific application, or a quick execution of a specific function interface in a specific application. As such, a detection result of the user operation can be obtained when the device is powered on. If the predetermined user operation can be detected, the specific function in the specific application associated with the predetermined user operation can be directly invoked. Operations such as unlocking a device, identifying an application, etc., can be avoided. In addition, a specific function of a specific application can be directly invoked, instead of just opening a main interface of the application, thereby further reducing the quantity of user operations in the application and improving operating efficiency.

[0028] In actual use, the specific application can be started in advance and run on the back end of the system, so as to implement quick invocation when needed. Alternatively, the specific application is not started in advance. In this case, the device can start the specific application after detecting the predetermined user operation and run the specific application on the front end or back end of the system. This is to implement quick invocation of functions in the application and to reduce occupation of memory resources.

[0029] In actual use, after detecting a predetermined user operation, the device can first find out whether a corresponding application has been running on the back end of the system. If so, directly switch to the application and jump to a specific function interface for displaying an information image. If it is not found that the application is running on the back end, the device starts the application and runs the application on the front end or back end of the system, and jumps to a specific function interface of the application or performs a specific function in the application.

[0030] In an actual application, an association between a predetermined user operation and an operation of "invoking a specific function" can be established in advance, so that the specific function can be directly invoked after the predetermined user operation is detected, instead of entering a main interface of the application. Specifically, related settings can be performed in the system of the mobile terminal, so as to establish an association relationship between a predetermined user operation and invocation of a specific function. Thus, when the predetermined user operation is detected, the specific function can be quickly invoked; or it can be set in an application installed in the system whether the specific function in the application

supports quick invocation. If yes, the specific function is associated with a predetermined user operation. For example, in a payment application of the mobile terminal, a two-dimensional code payment interface can be set to be quickly invoked through a predetermined user operation and can be associated with a specific predetermined user operation in the setting interface of the payment application. Alternatively, it can be set by default in the system and allows a user to perform settings for associating a predetermined user operation. In the present application, the specific application and the specific function interface can be set in advance by the user, set by the system, or set in another method. The specific predetermined user operation can also be set by the user.

[0031] In a specific implementation of the present application, quick invocation of a function in an application can be implemented by using a sensing module configured on the user equipment. Accordingly, a specific implementation of S101 is obtaining a result of detecting a user operation by the sensing module; a specific implementation of S102 is invoking the function in the application associated with the predetermined user operation after input of the predetermined user operation is detected.

[0032] The use of barcodes, two-dimensional codes, and other images for information exchange is a relatively common application. Common application scenarios include payment, access control, and exchange of business cards. However, currently it is still tedious for users to use mobile phones and other smart devices to perform image information exchange. In an example, the mobile phone two-dimensional code is used for quick payment. A typical operation process is as follows: the user takes out the mobile phone → wakes the mobile phone → unlocks the mobile phone → identifies a payment function APP → runs the APP → identifies a two-dimensional code function sub-page → executes a two-dimensional code display operation. In a practical application it can be seen that a complete two-dimensional code display operation requires many operation steps to achieve, which is not only inconvenient for the user, but also cannot be well adapted to application scenarios with a large number of users, such as supermarkets, buses, etc.

[0033] In the present implementation, an application scenario of using a mobile phone barcode (including one-dimensional barcode, two-dimensional barcode, etc.) for quick payment is used as an example to describe in detail the solution of the present application. To be specific, a payment interface with the payment barcode can

be quickly invoked in a payment application according to the solution of the present application.

[0034] The mobile phone user can select an operation mode as a trigger password for payment bar code display in advance. The operation can be implemented by using
5 a sensing module such as a gravity sensor, an acceleration sensor, a gyroscope, a distance sensor, and a fingerprint sensor on the mobile phone. The following gives some examples of user operations:

[0035] Using a gravity sensor: the gravity sensor is also called G-sensor and a special acceleration sensor. The gravity sensing technology is implemented using
10 piezoelectric effects. The horizontal direction is determined by measuring the magnitude of the force in two orthogonal directions of the gravity of the weight inside the mobile phone. The mobile phone is placed at the center of gravity sensing when the mobile phone is placed horizontally. By measuring acceleration caused by gravity by using the gravity sensor, the posture of the device relative to the horizontal plane
15 can be calculated. A typical application of a mobile phone gravity sensor is to automatically switch between the landscape mode and the portrait mode of the mobile phone.

[0036] In the solution of the present application, the predetermined user operation can be implemented based on a change in posture when the screen of the mobile
20 phone is substantially perpendicular to a horizontal plane, for example, a change of actions of "placing the mobile phone horizontally"/"placing the mobile phone vertically", "tilt the mobile phone to the left"/"tilt the mobile phone to the right" (the tilt angle reaches a certain threshold), etc. In a practical application, it can be considered that a predetermined user operation is the input when a quantity of
25 consecutive changes of the foregoing operations reaches a preselected threshold.

[0037] Using an acceleration sensor: the acceleration sensor is also called accelerometer, line accelerometer, etc. The acceleration sensor can measure linear acceleration generated by various external forces including gravity. Compared with the gravity sensor, the acceleration sensor can sense a linear static/moving state and a
30 movement direction of the mobile phone in addition to the perception of a posture relative to the horizontal plane.

[0038] In the solution of the present application, a predetermined user operation can be implemented based on a change in the movement direction of the mobile phone, for example, up and down shaking of the mobile phone, left and right shaking,

or shaking in any approximately straight forward and reverse directions. In a practical application, it can be set that when a quantity of times of continuous shaking such as the foregoing actions reaches a preselected quantity threshold and an amplitude of shaking reaches a preselected amplitude threshold, it is considered that a predetermined user operation is the input.

[0039] Using a gyroscope: the gyroscope can measure the angular velocity when an external force acts on an object and the object rotates, and can sense a rotational/static state and a direction of rotation.

[0040] In the solution of the present application, a predetermined user operation can be implemented based on a change in the rotation direction of the mobile phone. For example, a swing operation on the mobile phone, or rotation of the mobile phone in any axial direction. In a practical application, it can be set that when a quantity of times of continuous swinging reaches a preselected quantity threshold and an amplitude of swinging reaches a preselected amplitude threshold, it is considered that a predetermined user operation is the input.

[0041] Using a distance sensor: a detection result of the change of a physical quantity can be converted into a distance to measure the relative distance from the module to the object. The distance sensing module can include an optical displacement sensor, a linear proximity sensor, an ultrasonic displacement sensor, etc. based on different physical quantities detected. A common application of the mobile phone distance sensor is the mobile phone is close to the head when the user is answering or making a call, and the distance sensor can measure the distance between the mobile phone and the head. When the distance is reduced to a certain degree, the screen is turned off. When the user removes the mobile phone, the screen is turned on again. This can avoid an unintentional operation during the call, and can save power.

[0042] In the solution of the present application, user operations can be implemented based on changes in the distance between the mobile phone and an object (such as a palm, a wall, etc.), for example, action changes of "approximate to an object"/"removed from an object", where "approximate" and "remove" are determined based on a preselected distance threshold. In a practical application, it can be considered that a predetermined user operation is the input when a quantity of changes of the foregoing actions reaches a preselected threshold. For example, if the user moves the palm to a position close to the screen of the mobile phone, and makes the palm parallel to the screen of the mobile phone, and shakes the palm in opposite

directions once each, it is considered that a predetermined user operation is the input.

[0043] The predetermined user operation can be implemented in many other methods, which are not listed one by one in the present application, provided that the predetermined user operation does not conflict with other operations. In addition, it can be understood that two or more sensing modules can be combined to implement the predetermined user operation. For example, the acceleration sensor and the gyroscope are combined to determine a more complex posture/moving state of the mobile phone and form a corresponding user operation.

[0044] After the user records the user operation, the mobile phone records and stores the button information. The solution of the present application does not limit collection algorithms for various types of predetermined user operation information, and a traditional information collection algorithm can be used. Certainly, in some scenarios, some system's default operations of the device can also be used as predetermined user operations. A method of setting the predetermined operation of the user is not limited in the present application. For example, the predetermined operation is a system default or is set by the user. For another example, the operation is set by the user in the system, or is set by the user in a specific application in the system.

[0045] After the predetermined user operation setting is completed, a result of detecting the predetermined user operation by the sensing module can be obtained when the mobile phone is powered on. If the currently detected user operation matches the predetermined user operation, the mobile phone directly jumps to the payment barcode display interface in the payment application, and displays a barcode image for payment, thereby simplifying user operations. The solution of the present application does not limit matching algorithms for various types of specific operation information, and a traditional matching algorithm can be used.

[0046] In the solution of the present application, when a specific function interface displays an information image, a pre-generated static information image can be obtained, or an information image can be generated in real time. For example, in a quick display scenario of the payment barcode interface in the payment application, when the payment barcode interface is displayed, the information image of the payment barcode can be a static graphic, or can be a dynamically changeable graphic generated in real time.

[0047] In an implementation, the detection function of the sensing module can

remain in a continuous on state. The sensing module detects a predetermined user operation in real time and can report in an interrupted method. The user equipment can obtain a predetermined user operation detected by the sensing module in an interrupted method, so that the user equipment obtains the predetermined user operation and performs corresponding processing. Thus, as long as the user inputs the predetermined user operation, the payment barcode can be quickly displayed on the screen of the mobile phone, and it can be ensured that the user can use the predetermined operation to trigger displaying of the barcode at any time. In other words, the mobile device can detect a predetermined user operation in real time through the sensing module and can quickly start a related specific function interface by collecting a predetermined user operation.

[0048] In an implementation, the result of detecting the user operation by the sensing module can be obtained when the device is in a non-usage state. The non-usage state here can include one or more of a locked state, a sleep state, a standby state, or another state. In this case, the mobile phone can obtain the detection result in some specific states. In these specific states, the mobile phone can quickly start a specific function in a related application by obtaining the collection result of the sensing module.

[0049] In the foregoing non-usage states, the lock state can represent a user's restriction on the operation permission of the device. The sleep state and the standby state describe work states of a software or hardware module of the device and are not clearly distinguished in definition. In some cases, the foregoing non-usage states can all exist on one device. For example, some devices will be automatically locked after a period of standby or sleeping, or automatically switch a specific software and hardware module to a standby or sleep state after locking for a period of time. In conclusion, a common feature of the foregoing states is that if the device is currently in these states, it would be more tedious for the user to use the conventional barcode display operation. By applying the solution of the present application, the user can directly display the barcode under these circumstances without waking the device, unlocking the device, etc. In addition, a time for starting a function of obtaining the detection result of the predetermined user operation can be shortened, and power consumption of the device can be reduced.

[0050] In an implementation, it can be set that the sensing module can detect the predetermined user operation only when the device is in the non-usage state to

prevent the sensing module from starting for a long period and reduce power consumption.

5 **[0051]** In an implementation, based on an operation sequence of "first wake up and then unlock" of a general smart device, the sensing module can be set to obtain the detection result in a period "after the user equipment wakes up from the sleep state and before the user equipment is unlocked". Thus, a time for starting a function of obtaining the detection result can be shortened, and the power consumption of the device can be reduced.

10 **[0052]** In an implementation, the sensing module can also be set to detect the predetermined user operation only when "the user equipment is woken from the sleep state and has not been unlocked". When the screen of the mobile phone is locked and black, the detection function of the sensing module can be disabled and after the mobile phone is woken, the sensor module can be started to detect the predetermined user operation to further reduce the power consumption caused by the sensing module.

15 **[0053]** In other words, the function of obtaining a detection result of the predetermined user operation or the detection function of the sensing module can be disabled for most of the time when the mobile phone is not used (for example, in a pocket or a purse). When the mobile phone is woken by other means (for example, power button, volume button, etc.), the corresponding function is enabled. Based on the detection result of the predetermined user operation, the following situations may exist:

20 **[0054]** (1) The user inputs the predetermined user operation, and a payment interface of a payment barcode is quickly displayed. In addition to displaying the payment interface, the mobile phone can be unlocked, or the mobile phone remains in a locked state, which is not limited in the present application.

25 **[0055]** (2) The user normally unlocks the mobile phone (through a password, a gesture, etc.), and after unlocking succeeds, the mobile phone is being used, and disables the detection function of the sensing module.

30 **[0056]** (3) The user does not input any information, which is probably an unintentional operation, and after a period of time, the mobile phone enters the sleep state again, and disables the detection function of the sensing module.

[0057] It can be seen that applying the solution of the present application can further shorten the time for starting the sensing module under the premise of adapting

to the basic operating habits of the user, thereby reducing the power consumption of the device.

[0058] In this application, the working mode of the sensing module is not particularly limited. For example, the user equipment can detect the predetermined user operation continuously after the user equipment is powered on, or the user equipment can detect the predetermined user operation within a specified time, or the predetermined user operation detection module reports the predetermined user operation in an interrupted method, or the processor in the mobile phone actively invokes the sensing module to work. A specific working mode of the sensing module can be controlled or set based on a specific requirement.

[0059] In an implementation, if the user does not perform another operation on the device within a period of time after the barcode display interface is invoked, the display of the barcode image can be stopped to prevent the barcode image from being photographed or stolen and to improve information use security. A duration threshold to stop displaying the barcode image can be set based on an actual requirement, for example, 30 seconds and 60 seconds. A specific implementation to stop displaying the barcode image can be exiting a function interface of a function in a specific application, exiting a specific application, returning to a system standby interface, or restoring the device to a locked state, a sleep state, etc., which is not limited in the present application.

[0060] FIG. 2 is a schematic diagram illustrating a specific implementation scenario of applying the solution of the present application to merchant payment. When the mobile phone is in a sleep and locked state, the user holds the mobile phone and continuously shaking the mobile phone in any direction for more than three times. When the shaking amplitude reaches a certain requirement, the acceleration sensor detects the operation and matches the operation with a predetermined user operation for authentication. After the authentication succeeds, the payment barcode (including one-dimensional barcode and two-dimensional barcode) image in the payment application is displayed on the screen of the mobile phone. If the user does not perform another operation on the mobile phone for more than 60 seconds, the payment barcode image displayed on the mobile phone screen disappears.

[0061] In another specific implementation scenario of the solution of the present application, a predetermined user operation can be used to implement quick display of a specific merchant interface in a payment application or a shopping application.

Before using the function, the user preselects an association of a predetermined operation (for example, a shaking operation, etc.) with the "current business interface display" function in the payment application or shopping application. When using the function, the user enters a place of business, and then takes out the mobile phone and
5 inputs a predetermined associated operation. The mobile phone matches the operation with a predetermined operation for authentication. After the authentication succeeds, the positioning function of the mobile phone is invoked (for example, a positioning function based on WIFI, GPS, or Bluetooth) to obtain the current location of the mobile phone, and the corresponding business location is further calculated based on
10 the obtained location information, and then relevant information (such as product information, discount information) of the business is displayed on the screen of the mobile phone.

[0062] According to the solution of the present application, detection of a predetermined user operation can also be used in combination with other methods to
15 implement invocation of a specific application. For example, a result of detecting a user operation by the sensing module can be obtained when a predetermined button is pressed.

[0063] The user can pre-specify one or more buttons as one of the triggering conditions for invoking a function in an application. The button can be a physical
20 button or a virtual touch key provided on the mobile phone or can be a virtual key in a touchscreen operating system interface or a specific application interface. When the user needs to quickly invoke a function in an application, the user needs to input the predetermined operation while pressing the predetermined button. The device needs to obtain the result of detecting the predetermined user operation by the sensing
25 module, and further needs to determine whether the predetermined button is pressed. When "the predetermined user operation is detected" and "the predetermined button is pressed", the subsequent invocation of the function in the application can be triggered.

[0064] The mobile phone payment barcode application scenario is still used as an example. The user can specify the "volume down" button as a predetermined button
30 based on the usage habits. The user presses the "volume down" button by using a finger and shakes the mobile phone at the same time. When detecting that the two conditions are both satisfied, the mobile phone invokes the application to display the payment barcode.

[0065] For shortcut operations involving user privacy such as displaying payment

barcodes, there may be certain requirements for security. When the foregoing predetermined operation cooperates with the predetermined button to realize invocation of a specific function in a specific application, because the "predetermined button" also belongs to the user's personal private information (predetermined by the user) Such method can effectively confirm whether the current operator of the user equipment is a legitimate user and avoid a loss caused by illegal user's operation on the user equipment. In some cases, the method can also avoid an unintentional operation. For example, when the mobile phone is placed in a purse, quick invocation of a function in an application can be triggered due to excessive shaking and excessively fast frequency, and the combination of the predetermined user operation and the predetermined button can effectively avoid or reduce the occurrence of such non-user subjective triggering.

[0066] Other security verification mechanisms can be further added to improve the use security of users. For example, the user can be required to input one or more kinds of authentication information after input of the predetermined user operation is detected and before the function in the application is invoked. The authentication information can take various forms such as a text password, a fingerprint, a gesture, facial information, etc. If the authentication information input by the user is correct, the function in the application is invoked; if the authentication information input by the user is incorrect, the function in the application is not invoked.

[0067] FIG. 3 is a schematic diagram illustrating a specific implementation scenario where the solution of the present application is applied to merchant payment. When the screen of the mobile phone is black or is locked, or when the mobile phone is in a standby state, the user holds the mobile phone and swings the mobile phone for more than 2 times in an arbitrary approximate axial direction. The swinging amplitude satisfies a specific requirement; the gyroscope detects the operation and matches the operation with the predetermined user operation for authentication. After the authentication succeeds, the payment application is invoked, the screen displays a currently used payment method (which can be modified by the user based on a requirement), and the user is prompted to enter one or more kinds of authentication information.

[0068] For example, for some third-party payment applications, if the user does not enable the "keep me logged in" function, the user will be further required to enter a login password of the payment application after the swinging operation is

authenticated. The login password can take forms of a text password, a fingerprint, a gesture, facial information, etc. After the user enters the login password, the mobile phone performs authentication on the password locally or sends the login password to the network side for authentication. After the authentication succeeds, the payment barcode is displayed on the screen of the mobile phone.

[0069] In another implementation, after the swinging operation is authenticated, a payment method selection interface of the payment application is displayed on the screen of the mobile phone. The user is prompted to enter the unlock password (including a fingerprint and a digital password). After the user enters the correct unlock password, the user taps a payment method identifier, and the corresponding payment barcode is displayed.

[0070] It can be understood that the quick invocation of the payment bar code interface in the implementation of the present application is only used for schematically illustrating "quick invocation of a function in an application", and it is not a limitation on the specific implementation solution and the application scenario of the present application. In addition, different operations based on the sensing module can be associated with different functions in the same application, or can be associated with functions in different applications, so as to implement quick invocation of multiple functions in different applications.

[0071] According to a specific implementation of the present application, quick invocation of a function in an application can be implemented based on a fingerprint module configured on the user equipment. Here, the fingerprint module can be a module having a series of functions including fingerprint collection, matching operations, authentication, identification determining, etc. Accordingly, a specific implementation of S101 is obtaining a fingerprint input by the user on the fingerprint module; and a specific implementation of S102 is invoking the function in the application associated with the predetermined user operation after input of the fingerprint information is detected.

[0072] Instant messaging is one of the application functions frequently used by the users. At present, it is tedious for users to use mobile phones and other smart devices to perform instant messaging chat operations. A typical operation process is as follows: the user takes out the mobile phone → wakes the mobile phone → unlocks the mobile phone → identifies the instant messaging APP → runs the APP → taps the icon of a friend to enter the chat sub-interface → starts chatting. It can be seen that in

a practical application, a complete chat operation requires a plurality of steps to be implemented.

[0073] The present implementation describes the solution of the present application in detail by using an example of an instant messaging chat scenario. In the instant messaging application, a chat interface for a specific friend can be quickly invoked according to the solution of the present application.

[0074] In an actual application, an association between the fingerprint information and the operation of "invoking a chat interface for a specific friend" can be established in advance so that the mobile phone can directly jump to the chat interface for the specific friend instead of the main interface after the fingerprint information is detected. Specifically, related settings can be performed in the system of the mobile terminal to establish an association relationship between the fingerprint information and invocation of the chat interface for the specific friend. Thus, when the fingerprint information is detected, the chat interface for the specific friend can be quickly invoked; or it can be set in an application installed in the system whether the chat interface for the specific friend supports quick invocation. If yes, the chat interface for the specific friend is associated with the fingerprint information. For example, in the setting interface of the instant messaging application, the chat interface for the specific friend is set to be quickly invoked through fingerprint information, and it can be associated with specific fingerprint information, or can be set by default in the system. Moreover, the user can be allowed to perform related fingerprint settings. In the present application, there can be a plurality of chat interfaces for specific friends, and the plurality of chat interfaces can be associated with different pieces of fingerprint information for differentiation.

[0075] In an implementation, when fingerprint information is detected by the fingerprint module, a user authentication mechanism can be added through an authentication function of the fingerprint module to improve security. Specifically, after the fingerprint information is detected, the fingerprint information is matched with a preselected fingerprint. If the fingerprint information matches the preselected fingerprint, the chat interface for the specific friend is displayed. The association between the fingerprint information and invocation of the chat interface for the specific friend can be setting specific fingerprint information as a condition for triggering quick invocation of the chat interface for the specific friend. Specifically, the device user needs to record one or more pieces of fingerprint information of the

user in advance, and the fingerprint module generates authenticated fingerprint information and stores the authenticated fingerprint information. In a practical application, after the fingerprint module of the user equipment detects the fingerprint information, the fingerprint module determines whether the detected fingerprint information matches the pre-stored authentication fingerprint information. Only when the detected fingerprint information matches the pre-stored authentication fingerprint information, the chat interface for the specific friend is displayed. When the detected fingerprint information does not match the pre-stored authenticated fingerprint information (which can include a situation that no fingerprint information is detected), the chat interface for the specific friend is not displayed on the screen of the user equipment. Such triggering mechanism can effectively confirm whether the current operator of the user equipment is a legitimate user and avoid adverse consequences caused by illegal user's operation on the user equipment. The solution of the present application does not limit specific fingerprint collection and authentication algorithms, and traditional fingerprint collection and authentication algorithms can be used.

[0076] In an implementation, the detection function of the fingerprint module can remain in a continuous on state. The fingerprint module detects fingerprint information of the user in real time and can report in an interrupted method. The user equipment can obtain fingerprint information detected by the fingerprint module in an interrupted method, so that the user equipment obtains the fingerprint information and performs corresponding processing. Thus, as long as the user inputs the fingerprint information, the chat interface for the specific friend can be quickly displayed on the screen of the mobile phone, and it can be ensured that the user can use, at any time, the fingerprint to quickly trigger displaying of the chat interface for the specific friend. In other words, the mobile device can detect fingerprint information in real time through the sensing module, and can quickly start a related chat interface for a specific friend by collecting fingerprint information.

[0077] In an implementation, a result of detecting fingerprint information by the fingerprint module can be obtained when the device is in a non-usage state. The non-usage state here can include one or more of a locked state, a sleep state, a standby state, or another state. In this case, the mobile phone can collect fingerprint information in some specific states. In these specific states, the mobile phone can quickly start the chat interface for the specific friend in a related application by collecting the fingerprint information. For descriptions of the "non-usage state", refer

to the foregoing implementation. Details are not repeatedly described in the present implementation. By applying the solution of the present application, the user can directly display the chat interface for the specific friend under these circumstances without waking the device, unlocking the device, etc. Thus, a time for starting a function of obtaining the fingerprint detection result can be shortened, and power consumption of the device can be reduced.

[0078] In an implementation, it can be set that the fingerprint module can detect fingerprint information only when the device is in the non-usage state, so as to prevent the fingerprint module from starting for a long period and reduce power consumption. For example, when the screen of the mobile phone is locked and is black, the detection function of the fingerprint module can be disabled, and the fingerprint module can be started to perform fingerprint detection after the mobile phone is woken.

[0079] In an implementation, based on an operation sequence of "first wake up and then unlock" of a general smart device, the fingerprint module can be set to obtain the detection result in a period "after the user equipment wakes up from the sleep state and before the user equipment is unlocked". Thus, a time for starting a function of obtaining the fingerprint detection result can be shortened, and power consumption of the device can be reduced.

[0080] In an implementation, the fingerprint module can also be set to detect fingerprint information only when "the user equipment is woken from the sleep state and has not been unlocked". For example, when the screen of the mobile phone is locked and black, the detection function of the fingerprint module can be disabled. After the mobile phone is woken, the fingerprint module can be started to detect a fingerprint, so as to further reduce the power consumption caused by the fingerprint module.

[0081] In other words, the function of obtaining a fingerprint detection result or the detection function of the fingerprint module can be disabled for most of the time when the mobile phone is not used (for example, in a pocket or a purse). When the mobile phone is woken by other means (for example, power button, volume button, etc.), the corresponding function is enabled. Based on the fingerprint detection result, the following situations may exist:

[0082] (1) The user inputs fingerprint information, and the chat interface for the specific friend is quickly displayed. To help subsequent chat operations of the user,

the mobile phone can be further unlocked.

[0083] (2) The user normally unlocks the mobile phone (through a password, a gesture, etc.). After unlocking succeeds, the mobile phone is being used, and disables the detection function of the fingerprint module.

5 **[0084]** (3) The user does not input any information, which is probably an unintentional operation. After a period of time, the mobile phone enters the sleep state again, and disables the detection function of the fingerprint module.

[0085] It can be seen that applying the solution of the present application can further shorten the time for starting the fingerprint module under the premise of
10 adapting to the basic operating habits of the user, thereby reducing the power consumption of the device.

[0086] In this application, the working mode of the fingerprint module is not particularly limited. For example, the user equipment can detect a fingerprint continuously after the user equipment is powered on, or the user equipment can detect
15 a fingerprint within a specified time, or the fingerprint detection module reports a fingerprint in an interrupted method, or the processor in the mobile phone actively invokes the fingerprint module to work. A specific working mode of the fingerprint module can be controlled or set based on a specific requirement.

[0087] FIG. 4 is a schematic diagram illustrating a specific implementation
20 scenario for applying the solution of the present application to invocation of a specific function in an instant messaging application. When the mobile phone is in a sleep state and is locked, the user places a finger on a fingerprint collector on the back of the mobile phone. The fingerprint module collects fingerprint information and performs authentication on the fingerprint information. After the authentication
25 succeeds, a chat interface image for a specific friend in the instant messaging application is displayed on the screen of the mobile phone, and the user can directly start chatting with the specific friend (Marry).

[0088] In an implementation, the device can also be unlocked by using fingerprint information. In this case, the "unlock with a fingerprint" function and the "quickly
30 display a chat interface for a specific friend with a fingerprint" function can be distinguished as follows:

[0089] The user can record in advance authenticated fingerprint information for displaying a chat interface for a specific friend (hereinafter referred to as "display fingerprint") and authenticated fingerprint information for unlocking the user

equipment (hereinafter referred to as "unlock fingerprint"). Then, an association between the "display fingerprint" and the operation of "invoking a chat interface for a specific friend in a specific instant application" and an association between the "unlock fingerprint" and the operation of "unlocking the user equipment" are separately established. Further, when the user equipment is in the locked state, after the fingerprint module detects fingerprint information input by the user, the fingerprint module performs different processing based on a status of matching between the currently detected fingerprint information and the pre-stored fingerprint information, and the specific processing method is as follows:

[0090] When the user equipment is in the locked state, a result of detecting the fingerprint information by the fingerprint module is obtained; if no fingerprint information is detected, no operation is performed. If fingerprint information is detected, if the detected fingerprint information matches the "display fingerprint", a function of chatting with the specific friend in the chat interface for a specific friend is invoked, so as to display the chat interface for the specific friend on the screen of the user equipment. However, if the detected fingerprint information matches the "unlock fingerprint", the user equipment is unlocked.

[0091] For example, based on usage habits, the user can record the fingerprint of the right index finger as the "unlock fingerprint" and the fingerprint of the right middle finger as the "display fingerprint". In actual use, after the user takes out the mobile phone and executes the wake-up operation, the screen of the mobile phone displays an unlock prompt. If the user needs to quickly display the chat interface for the specific friend, the middle finger is placed on the fingerprint collector. After the matching is successful, the application is invoked and the chat interface for the specific friend is displayed. If the user needs to use other functions of the mobile phone, the index finger is placed on the fingerprint collector. After the matching is successful, the mobile phone is unlocked based on the default mode. Thus, the "quick display" operation and the "unlock with a fingerprint" operation can be effectively distinguished without affecting normal usage habits of the user.

[0092] In an implementation, the same fingerprint can also be used to implement both the function of unlocking and the function of quickly displaying the chat interface for the specific friend. Specifically, the same fingerprint information of the user can be recorded, and can be used as the fingerprint used for unlocking and the fingerprint used for quickly displaying the chat interface for the specific friend, and

duration of fingerprint collection can be set to distinguish whether the collected fingerprint is used for unlocking or quickly displaying the chat interface for the specific friend. For example, the fingerprint detection module collects the user's fingerprint information, and records duration in which the user's fingerprint stays on the fingerprint sensor. If the duration is within 1s, the collected fingerprint is considered as the fingerprint used for unlocking, and the device is unlocked. If the duration exceeds 1s, the collected fingerprint is considered as the fingerprint used for quickly displaying the chat interface for the specific friend (for example, a specific friend chat interface page in the instant messaging application), and the chat interface for the specific friend is quickly invoked. Certainly, in some other scenarios, there can be different methods to implement that the same fingerprint is used for unlocking and quickly displaying a chat interface for a specific friend. For example, the fingerprint sensor and a pressure sensor can be integrated together, and whether the fingerprint is used for unlocking or quickly displaying a chat interface for a specific friend is determined based on the pressure detected during fingerprint collection.

[0093] It can be understood that in an implementation, different fingerprints or different operation methods of the same fingerprint can be used to distinguish different friends (for example, different times in which the finger stays on the fingerprint collector, different pressures, etc.), so as to implement quick display of chat interfaces for different specific friends.

[0094] In an implementation, fingerprint information detection can also be combined with other methods to implement invocation of a chat interface for a specific friend in a specific application. For example, the user can pre-specify one or more buttons as the trigger password for displaying a chat interface for a specific friend. The button can be a physical button or a virtual touch key provided on the mobile phone, or a virtual key in a touchscreen operating system interface or a specific application interface. When the user needs to quickly display a chat interface for a specific friend, in addition to fingerprint information, the user further needs to press a self-defined button. The device needs to obtain a result of detecting the fingerprint information by the fingerprint module, and further needs to determine whether the predetermined button is pressed, and only when "the fingerprint information is detected" and "the predetermined button is pressed", the chat interface for the specific friend can be displayed subsequently.

[0095] For example, the user can specify a "volume down" button as a

predetermined key based on usage habits. In actual use, the user takes out the mobile phone, places a finger (for example, the right index finger) on the fingerprint collector, and simultaneously presses the "volume down" button with another finger (for example, the right thumb). After detecting that the two conditions are both satisfied, the mobile phone invokes the instant messaging application to display a chat interface for a specific friend.

[0096] In some implementations, the fingerprint information can also be used as a method for triggering quick display of a chat interface for a specific friend, and no actual authentication is required for the detected fingerprint information. In other words, any fingerprint information can trigger quick display of a chat interface for a specific friend. For example, when the fingerprint information and the predetermined button are combined to display a chat interface for a specific friend in a specific application, since the "predetermined button" also belongs to the user's personal private information (predetermined by the user), the chat interface for the specific friend can be started without comparing the currently detected fingerprint information with the authenticated fingerprint information, the security of the chat can be ensured, and the fingerprint matching unlocking mechanism is not affected. Certainly, in some other scenarios, after fingerprint information is detected, a specific function interface in a specific application can be invoked without performing a matching authentication process on the fingerprint information. For example, when the mobile device is in a working state, if fingerprint information is detected, (for example, if the user places a finger on the fingerprint collector), the chat interface for the specific friend in the instant messaging application can be invoked.

[0097] It can be understood that the quick invocation of a chat interface for a specific friend in the implementation of the present application is only used for schematically illustrating "quick invocation of a function in an application", and it is not a limitation on the specific implementation solution and the application scenario of the present application. In addition, different fingerprints or different operation methods of the same fingerprint (for example, different times in which the finger stays on the fingerprint collector, different pressures, etc.) can be associated with different functions in the same application, and can also be associated with functions in a plurality of different applications, so as to achieve quick avocation of a plurality of different application functions.

[0098] In an implementation of the present application, quick invocation of a

function in an application can be implemented based a button configured on the user equipment, a touch input module, etc. The touch input module here can include a touchscreen, a touchpad, and other independent touch input module. Accordingly, a specific implementation of S101 is obtaining an operation on the user equipment, where the operation can be a press operation on the button of the device, or a touch gesture input on the touch input module; and a specific implementation of S102 is invoking a function in an application associated with the predetermined user operation when the operation matches an operation of pressing a predetermined button or matches a predetermined touch gesture.

[0099] Media playback is one of the application functions frequently used by users. At present, when a user controls media playback, a typical operation process is as follows: the user takes out the mobile phone → wakes the mobile phone → unlocks the mobile phone → identifies a media playback APP → runs the APP → taps play/pause/switch buttons and other function buttons to achieve control. It can be seen in a practical application, a plurality of steps are required each time controlling media playback.

[0100] The present implementation describes the solution of the present application in detail by using an application scenario of instant media playback control as an example. In a media playback application, media playback can be quickly controlled according to the solution of the present application.

[0101] In a practical application, an association between an operation mode and a specific playback control function (for example, play, pause, stop, switch to a previous media file, switch to a subsequent media file, etc.) in a media playback application can be established in advance, so that after the predetermined user operation is detected, the mobile terminal can directly trigger the function instead of invoking the application's main interface. Specifically, related settings can be performed in the system of the mobile terminal, so as to establish an association relationship between fingerprint information and invoking a specific playback control function; or it can be set in an application installed in the system whether a specific playback control function supports quick invocation. If yes, the specific playback control function is associated with a predetermined user operation. For example, a specific playback control function is set, in a setting interface of a media playback application, to be quickly invoked through a predetermined user operation, and can be associated with a specific predetermined user operation; or it can be set by default in

the system and allows a user to perform settings for associating a predetermined user operation. In the present application, there can be a plurality of specific playback control functions, and the plurality of specific playback control functions can be associated with different predetermined user operations for differentiation.

5 **[0102]** The mobile phone user can preselect one or more operation modes as the trigger password for invoking a specific playback control function. The operation can be implemented by using a physical button on the mobile phone (for example, a power button, a volume up button, a volume down button, etc., a home button of an iOS mobile phone, or any button of a keyboard mobile phone) or a virtual touch key
10 (for example, a home key, a back key, a menu key, etc. of an Android mobile phone), or can be implemented by using a virtual key in an operating system of a mobile phone with a touchscreen or a specific application interface, or specific touch gestures. The following gives some examples of user operations:

15 **[0103]** Pressing a button: one or more buttons with no preselected function are provided on some mobile phones or operating systems, and the user can define the function of the button, such as screenshots, mute, or start a specific application. These buttons can be directly used to implement the user operations in the solution of the present application.

20 **[0104]** Pressing and holding a button: the button includes a physical button, a virtual touch key, or a virtual key in the mobile phone interface. The "pressing and holding" criterion is based on the configuration parameters of the operating system, which is not limited in the present application.

25 **[0105]** Pressing a combination of two or more buttons simultaneously: the combination can be a combination of buttons of the same type, for example, simultaneously pressing a power button and a volume down button (which are both physical buttons). Moreover, the combination can be a combination of different types of buttons, for example, simultaneously pressing a power button (physical button) and a back key (virtual touch key).

30 **[0106]** Pressing two or more buttons successively in a specific order: the buttons can be a combination of buttons of the same type, for example, entering a password sequence; or can be a combination of different types of buttons. In addition, a time for completing the entering is limited.

[0107] Specific touch gestures: a variety of touch gestures can be obtained based on combinations of tap/tap and hold/slide, single finger/multi-finger touch, and

specific screen positions, for example, successively tapping the screen twice, sliding from the bottom of the screen to the top of the screen, tapping and holding any position on the screen with three fingers, etc., and these gestures can all be used as user operations. In addition, a specific slide track can also be used as a user operation,
5 for example, a "Z" shape is drawn on the screen, a "V" shape is drawn on the screen, etc. The touch gesture can be implemented based on a touchscreen, or can be implemented based on an independent touch device such as a touchpad.

[0108] The user operation can be implemented in many other methods, which are not listed one by one in the present application, provided that the user operation does
10 not conflict with other operations. After the user records the user operation, the mobile phone records and stores the button information. Certainly, in some scenarios, some system's default operations of the device can also be used as predetermined user operations. A method of setting the predetermined operation of the user is not limited in the present application. For example, the predetermined operation is a system
15 default or is set by the user. For example, the predetermined operation is set by the user in the system, or is set by the user in a specific application in the system.

[0109] In an implementation, in order to ensure that the user can use the predetermined operation to quickly trigger the specific playback control function, the function of detecting the user's input can be set to be continuously enabled, so that the
20 specific playback control function can be triggered once the user inputs the predetermined operation information.

[0110] In an implementation, the user's input behavior can be detected when the device is in a non-usage state. The non-usage state can include one or more of a locked state, a sleep state, a standby state, etc. For descriptions of the "non-usage
25 state", refer to the foregoing implementation. Details are not repeatedly described in the present implementation. The foregoing solution can enable the user to directly invoke the specific playback control function without waking up the device, unlocking the device, etc., and in addition, can avoid power consumption caused by long-term startup of the input detection function.

[0111] In an implementation of the present application, based on an operation sequence of "first wake up and then unlock" of a general smart device, a time for detecting the user's input behavior can be set to a period "after the user equipment
30 wakes up from the sleep state and before the user equipment is unlocked". In other words, the function of detecting the user's input behavior can be disabled for most of

the time when the mobile phone is not used (for example, in a pocket or a purse). When the mobile phone is woken by other means (for example, power button, volume button, etc.), the input detection function is enabled, and the following situations may exist:

5 **[0112]** (1) The user inputs a predetermined user operation to invoke a particular playback control function in a media play application. In addition to the invocation function, the mobile phone can be unlocked, or the mobile phone remains in a locked state, which is not limited in the present application.

10 **[0113]** (2) The user normally unlocks the mobile phone (through a password, a gesture, etc.), and after unlocking succeeds, the mobile phone is being used, and disables the input detection function.

15 **[0114]** (3) The user does not input any information, which is probably an unintentional operation, and after a period of time, the mobile phone enters the sleep state again, and disables the input detection function.

15 **[0115]** It can be seen that applying the foregoing solution can further shorten the time for enabling the input detection function, under the premise of adapting to the basic operating habits of the user, thereby reducing the power consumption of the device.

20 **[0116]** FIG. 5 is a schematic diagram illustrating a specific implementation scenario of applying the solution of the present application to a media playback scenario. When the mobile phone is in a sleep state and is locked, the user draws a "Z"-shaped pattern on the screen of the mobile phone using a gesture, and the mobile phone matches the pattern with a pre-stored user operation gesture for authentication. After the authentication succeeds, the "play" function in the media playback application is triggered.

25 **[0117]** Other security verification mechanisms can be further added to improve the security of the use of specific application-specific functions (such as display of two-dimensional code payment). For example, the user can be required to input one or more kinds of authentication information after input of the predetermined user operation is detected and before the specific function is invoked. The authentication information can take various forms such as a text password, a fingerprint, a gesture, etc. If the authentication information input by the user is correct, the specific function is invoked; if the authentication information input by the user is incorrect, the specific function is not invoked.

[0118] In an implementation, a predetermined user operation can also be used to unlock the device. To distinguish between the "Unlock using a predetermined user operation" function and the "quickly invoke a specific playback control function using a predetermined user operation" function, the following solution is provided:

5 **[0119]** The user can record in advance a predetermined user operation for invoking a specific playback control function (hereinafter referred to as "invoke operation") and a predetermined user operation for unlocking the user equipment (hereinafter referred to as "unlock operation"). An association between the "invoke operation" and the "function of invoking a specific playback control function in a media playback application" and an association between the "unlock operation" and "unlock the user equipment" are established. Further, when the user equipment is in the locked state, after the input detection function detects an operation currently input by the user, different processing is performed based on a status of matching between the currently detected operation and the pre-stored predetermined user operation. The specific processing method is as follows:

15 **[0120]** An input behavior of the user is detected when the user equipment is in the locked state; if no user operation is detected, no processing is performed; if a user operation is detected, if the currently detected user operation matches the "invoke operation", the specific playback control function in the specific application is invoked; or if the currently detected user operation matches the "unlock operation", the user equipment is unlocked.

20 **[0121]** For example, assuming that the mobile phone is unlocked by using a graphic, the user can record a gesture drawing graphic "N" as the "unlock operation" and record a gesture drawing graphic "Z" as the "invoke operation" based on usage habits. In actual use, after the user takes out the mobile phone and executes the wake-up operation, the screen of the mobile phone invokes an unlocking prompt. At this time, if the user needs to quickly invoke the specific playback control function, the user draws the graphic "Z" on the screen, and the specific playback control function in the media playback application is invoked after the matching is successful.

25 If the user needs to use another function of the mobile phone, the user draws a graphic "N" on the screen, and after the matching is successful, the mobile phone is unlocked in a default mode.

30 **[0122]** In an implementation, assuming that the mobile phone is unlocked using a digital password, based on usage habits, the user can record a password "1111" as the

"unlock operation" and record a password "2222" as the "invoke operation". In actual use, after the user takes out the mobile phone and executes the wake-up operation, the screen of the mobile phone invokes an unlocking prompt. At this time, if the user needs to quickly invoke the specific playback control function, the user enters the password "2222", and the specific playback control function in the media playback application is invoked after the matching is successful. If the user needs to use another function of the mobile phone, the user enters the password "1111", and after the matching is successful, the mobile phone is unlocked in a default mode.

[0123] It can be seen that the foregoing method can effectively distinguish between the "quick invocation" operation and the "unlocking" operation without affecting normal usage habits of the user.

[0124] It can be understood that, in an implementation, different predetermined operations (such as different gestures, different passwords, etc.) can be used to distinguish different playback control functions, for example, "slide left" is associated with the "switch to a previous media file" function, "slide right" is associated with the "switch to the next media file" function, "slide up" is associated with the "pause" function, and "slide down" is associated with the "stop" function, so as to achieve quick invocation of different playback control functions.

[0125] It can be understood that the quick invocation of a specific playback control function in the implementation of the present application is only used for schematically illustrating "quick invocation of a function in an application", and it is not a limitation on the specific implementation solution and the application scenario of the present application. In addition, different buttons and operation gestures can be associated with different functions in the same application, or can be associated with functions in different applications, so as to implement quick invocation of multiple functions in different applications.

[0126] Corresponding to the foregoing method, the present application further provides an apparatus for invoking a function in an application. Referring to FIG. 6, the apparatus can include: a detection control module 110, configured to obtain an operation of a user on user equipment; and an invocation control module 120, configured to invoke a function in an application associated with a predetermined user operation when the obtained operation matches the predetermined user operation.

[0127] In a specific implementation of the present application, a sensing module is configured on the user equipment.

[0128] The detection control module 110 can be specifically configured to obtain a result of detecting a user operation by the sensing module; and the invocation control module 120 can be specifically configured to invoke the function in the application associated with the predetermined user operation after input of the predetermined user operation is detected.

[0129] In a specific implementation of the present application, the detection control module 110 can be specifically configured to obtain the result of detecting a user operation by the sensing module when the user equipment is in a non-usage state, where the non-usage state includes a locked state, a sleep state, and/or a standby state.

[0130] In a specific implementation of the present application, the detection control module 110 can be specifically configured to obtain the result of detecting a user operation by the sensing module when the user equipment is woken from a sleep state and is in a locked state.

[0131] In a specific implementation of the present application, the detection control module 110 can be specifically configured to obtain the result of detecting a user operation by the sensing module when a predetermined button is pressed.

[0132] In a specific implementation of the present application, the invocation control module 120 can be specifically configured: to further determine whether the user inputs correct authentication information after input of the predetermined user operation is detected and to invoke the function in the application associated with the predetermined user operation if the user inputs correct authentication information.

[0133] In a specific implementation of the present application, the sensing module is an acceleration sensor; and the predetermined user operation is a shaking operation on the user equipment, where a quantity of times of shaking and an amplitude of the shaking operation are respectively greater than or equal to preselected thresholds.

[0134] In a specific implementation of the present application, the sensing module is a gyroscope; and the predetermined user operation is a swing operation on the user equipment, where a quantity of times of swinging and an amplitude of the swing operation are respectively greater than or equal to preselected thresholds.

[0135] In a specific implementation of the present application, a button is configured on the user equipment.

[0136] The detection control module 110 can be specifically configured to obtain a pressing operation of the user on the button of the user equipment; and the predetermined user operation can specifically include an operation of pressing a

predetermined button.

[0137] In a specific implementation of the present application, a touch input module is configured on the user equipment.

5 [0138] The detection control module 110 can be specifically configured to obtain a touch gesture that is inputted by the user on the touch input module; and the predetermined user operation can specifically include an operation of inputting a predetermined touch gesture.

[0139] In a specific implementation of the present application, a fingerprint module is configured on the user equipment.

10 [0140] The detection control module 110 can be specifically configured to obtain a fingerprint that is inputted by the user on the fingerprint module; and the predetermined user operation can specifically include inputting preselected fingerprint information.

[0141] In a specific implementation of the present application, the invocation control module 120 can be specifically configured to invoke an information image display function interface in an application including an information image, so as to display an information image on a screen of the user equipment.

[0142] The present application further provides a barcode payment apparatus, applied to user equipment with a sensing module. Referring to FIG. 7, the apparatus
20 can include: a detection control module 210, configured to obtain an operation of a user on user equipment; and a payment barcode display control module 220, configured to invoke a payment barcode display interface in a payment application when the obtained operation matches a predetermined user operation, so as to display a barcode image used for payment on a screen of the user equipment.

25 [0143] In a specific implementation of the present application, a sensing module is configured on the user equipment.

[0144] The detection control module 210 can be specifically configured to obtain a result of detecting a user operation by the sensing module; and the payment barcode display control module 220 can be specifically configured to invoke the payment
30 barcode display interface in the payment application when input of the predetermined user operation is detected, so as to display the barcode image used for payment on the screen of the user equipment.

[0145] It can be understood that, the barcode payment apparatus can be an implementation of the function invocation apparatus in the foregoing application in a

specific application environment. Therefore, for description of a specific implementation principle of the barcode payment apparatus, refer to the description of the function invocation apparatus in the foregoing implementation and the method in the foregoing implementation. The description will not be repeated in this implementation.

[0146] In addition, for an implementation process of functions of each module in the apparatus, refer to an implementation process of a corresponding step in the foregoing method; details are not described herein.

[0147] The function invocation apparatus or the barcode payment apparatus in the foregoing application provided by the present application can be applied to devices such as a mobile phone, a tablet computer, a smart watch, etc. FIG. 8 is a schematic structural diagram illustrating a device used to configure the apparatus provided in the present application. The device can include a processor 1010, a memory 1020, an input/output interface 1030, a communications interface 1040, and a bus 1050. The processor 1010, the memory 1020, the input/output interface 1030, and the communications interface 1040 implement mutual communication and connection by using the bus 1050.

[0148] The processor 1010 can be a general CPU (Central Processing Unit), a microprocessor, an application-specific integrated circuit (ASIC), or one or more integrated circuits, and is configured to execute a related program, so as to implement the technical solution provided in the present application.

[0149] The memory 1020 can be implemented in the form of a ROM (Read Only Memory), a RAM (Random Access Memory), a static storage device, a dynamic storage device, or the like. The memory 1020 can store an operating system and other application programs. When software or hardware is used to implement the technical solutions provided by the present application, related program code is stored in the memory 1020, and is invoked and executed by the processor 1010.

[0150] The input/output interface 1030 is configured to connect input/output modules for information input and output. The input/output module can be configured as a component in the device (not shown in the figure) or externally connected to the device to provide corresponding functions. The input device can include a keyboard, a mouse, a touchscreen, a microphone, various types of sensors, etc. The output device can include a display, a speaker, a vibrator, an indicator lamp, etc.

[0151] The communications interface 1040 is configured to connect a

communications module (not shown in the figure), so as to realize communication and interaction between the present device and other devices. The communications module can implement communication through a wired method (for example, USB, network cable, etc.), and can also implement communication through a wireless method (for example, mobile network, WIFI, Bluetooth, etc.).

[0152] The bus 1050 includes a channel through which information is transmitted between parts (such as the processor 1010, the memory 1020, the input/output interface 1030, and the communications interface 1040) of the device.

[0153] It should be noted that although the foregoing device shows only the processor 1010, the memory 1020, the input/output interface 1030, the communications interface 1040, and the bus 1050. In a specific implementation process, the device can further include other necessary components to achieve normal operation. In addition, a person skilled in the art should understand that the foregoing device can include only components required for implementing the solution of the present application, and does not necessarily include all components shown in the figure.

[0154] According to the descriptions of the implementations, a person skilled in the art can clearly understand that the present application can be implemented by software and necessary universal hardware platforms. Based on such an understanding, the technical solutions of the present application essentially or the part contributing to the existing technology can be implemented in a form of a software product. The software product is stored in a storage medium, such as a ROM/RAM, a hard disk, or an optical disc, and includes several instructions for instructing a computer device (which can be a personal computer, a server, or a network device) to perform the methods described in the implementations or some parts of the implementations of the present application.

[0155] The implementations in the present disclosure are all described in a progressive method. For same or similar parts in the implementations, reference can be made to these implementations, and each implementation focuses on a difference from other implementations. Especially, the apparatus implementation is basically similar to the method implementations, and therefore is briefly described. For a relevant part, reference can be made to the description in the part of the method implementations. The apparatus implementations described above are merely examples, in which the modules described as separate components can or cannot be

physically separated, and the functions of the modules can be implemented in a same or a plurality of software and/or hardware modules when the solution of the present application is implemented. A part or all of the modules can be selected according to actual needs to achieve the objectives of the solutions of the present implementations.

- 5 A person of ordinary skill in the art can understand and implement the implementations of the present invention without creative efforts.

[0156] The foregoing descriptions are merely specific implementations of the present application. It should be noted that a person of ordinary skill in the art can make several improvements or polishing without departing from the principle of the present application and the improvements or polishing shall fall within the protection scope of the present application.

10

CLAIMS

What is claimed is:

1. A method for invoking a function in an application, applied to user equipment, wherein the method comprises:

5 obtaining an operation of a user on the user equipment; and
 invoking a function in an application associated with a predetermined user operation when the obtained operation matches the predetermined user operation.

2. The method according to claim 1, wherein a sensing module is configured on the user equipment;

10 the obtaining an operation of a user on the user equipment specifically comprises: obtaining a result of detecting a user operation by the sensing module; and

 the invoking a function in an application associated with a predetermined user operation when the obtained operation matches the predetermined user operation specifically comprises: invoking the function in the application associated with the
15 predetermined user operation after input of the predetermined user operation is detected.

3. The method according to claim 2, wherein the obtaining a result of detecting a user operation by the sensing module comprises:

 obtaining the result of detecting a user operation by the sensing module when the
20 user equipment is in a non-usage state, wherein the non-usage state comprises a locked state, a sleep state, and/or a standby state.

4. The method according to claim 3, wherein the obtaining the result of detecting a user operation by the sensing module when the user equipment is in a non-usage state comprises:

25 when the user equipment is woken from a sleep state and is in a locked state, obtaining the result of detecting a user operation by the sensing module.

5. The method according to claim 2, wherein the obtaining a result of detecting a user operation by the sensing module comprises:

 when a predetermined button is pressed, obtaining the result of detecting a user
30 operation by the sensing module.

6. The method according to claim 2, wherein the invoking the function in the application associated with the predetermined user operation after input of the

predetermined user operation is detected comprises:

after input of the predetermined user operation is detected, further determining whether the user inputs correct authentication information, and if the user inputs correct authentication information, invoking the function in the application associated with the predetermined user operation.

7. The method according to claim 2, wherein the sensing module is an acceleration sensor; and the predetermined user operation is a shaking operation on the user equipment, wherein a quantity of times of shaking and an amplitude of the shaking operation are respectively greater than or equal to preselected thresholds.

8. The method according to claim 2, wherein the sensing module is a gyroscope; and the predetermined user operation is a swing operation on the user equipment, wherein a quantity of times of swinging and an amplitude of the swing operation are respectively greater than or equal to preselected thresholds.

9. The method according to claim 1, wherein a button is configured on the user equipment;

the obtaining an operation of a user on the user equipment specifically comprises: obtaining a pressing operation of the user on the button of the user equipment; and the predetermined user operation specifically comprises an operation of pressing a predetermined button.

10. The method according to claim 1, wherein a touch input module is configured on the user equipment;

the obtaining an operation of a user on the user equipment specifically comprises: obtaining a touch gesture that is inputted by the user on the touch input module; and

the predetermined user operation specifically comprises an operation of inputting a predetermined touch gesture.

11. The method according to claim 1, wherein a fingerprint module is configured on the user equipment;

the obtaining an operation of a user on the user equipment specifically comprises: obtaining fingerprint information that is inputted by the user on the fingerprint module;

and

the predetermined user operation is inputting preselected fingerprint information.

12. The method according to claim 1, wherein the invoking a function in an application associated with the predetermined user operation comprises:

invoking an information image display function interface in an application

comprising an information image, so as to display an information image on a screen of the user equipment.

13. A barcode payment method, applied to user equipment, wherein the method comprises:

5 obtaining an operation of a user on the user equipment; and

invoking a payment barcode display interface in a payment application when the obtained operation matches a predetermined user operation, so as to display a barcode image used for payment on a screen of the user equipment.

14. The method according to claim 13, wherein a sensing module is configured
10 on the user equipment;

the obtaining an operation of a user on the user equipment specifically comprises: obtaining a result of detecting a user operation by the sensing module; and

the invoking a payment barcode display interface in a payment application when the obtained operation matches a predetermined user operation, so as to display a
15 barcode image used for payment on a screen of the user equipment specifically comprises: when input of the predetermined user operation is detected, invoking the payment barcode display interface in the payment application, so as to display the barcode image used for payment on the screen of the user equipment.

15. An apparatus for invoking a function in an application, applied to user
20 equipment, wherein the apparatus comprises:

a detection control module, configured to obtain an operation of a user on the user equipment; and

an invocation control module, configured to invoke a function in an application associated with a predetermined user operation when the obtained operation matches
25 the predetermined user operation.

16. The apparatus according to claim 15, wherein a sensing module is configured on the user equipment;

the detection control module is specifically configured to obtain a result of detecting a user operation by the sensing module; and

30 the invocation control module is specifically configured to invoke the function in the application associated with the predetermined user operation after input of the predetermined user operation is detected.

17. The apparatus according to claim 16, wherein the detection control module is specifically configured to:

obtain the result of detecting a user operation by the sensing module when the user equipment is in a non-usage state, wherein the non-usage state comprises a locked state, a sleep state, and/or a standby state.

18. The apparatus according to claim 17, wherein the detection control module is
5 specifically configured to:

when the user equipment is woken from a sleep state and is in a locked state, obtain the result of detecting a user operation by the sensing module.

19. The apparatus according to claim 16, wherein the detection control module is specifically configured to:

10 when a predetermined button is pressed, obtain the result of detecting a user operation by the sensing module.

20. The apparatus according to claim 16, wherein the invocation control module is specifically configured to:

15 after input of the predetermined user operation is detected, further determine whether the user inputs correct authentication information, and if the user inputs correct authentication information, invoke the function in the application associated with the predetermined user operation.

21. The apparatus according to claim 16, wherein the sensing module is an acceleration sensor; and the predetermined user operation is a shaking operation on
20 the user equipment, wherein a quantity of times of shaking and an amplitude of the shaking operation are respectively greater than or equal to preselected thresholds.

22. The apparatus according to claim 16, wherein the sensing module is a gyroscope; and the predetermined user operation is a swing operation on the user equipment, wherein a quantity of times of swinging and an amplitude of the swing
25 operation are respectively greater than or equal to preselected thresholds.

23. The apparatus according to claim 15, wherein a button is configured on the user equipment;

the detection control module is specifically configured to: obtain a pressing operation of the user on the button of the user equipment; and

30 the predetermined user operation specifically comprises an operation of pressing a predetermined button.

24. The apparatus according to claim 15, wherein a touch input module is configured on the user equipment;

the detection control module is specifically configured to obtain a touch gesture

that is inputted by the user on the touch input module; and

the predetermined user operation specifically comprises an operation of inputting a predetermined touch gesture.

25. The apparatus according to claim 15, wherein a fingerprint module is
5 configured on the user equipment;

the detection control module is specifically configured to obtain fingerprint information that is inputted by the user on the fingerprint module; and

the predetermined user operation specifically comprises inputting preselected fingerprint information.

10 26. The apparatus according to claim 15, wherein the invocation control module is specifically configured to:

invoke an information image display function interface in an application comprising an information image, so as to display an information image on a screen of the user equipment.

15 27. A barcode payment apparatus, applied to user equipment, wherein the apparatus comprises:

a detection control module, configured to obtain an operation of a user on the user equipment; and

20 a payment barcode display control module, configured to invoke a payment barcode display interface in a payment application when the obtained operation matches a predetermined user operation, so as to display a barcode image used for payment on a screen of the user equipment.

28. The apparatus according to claim 27, wherein a sensing module is configured on the user equipment;

25 the detection control module is specifically configured to: obtain a result of detecting a user operation by the sensing module; and

the payment barcode display control module is specifically configured to: when input of the predetermined user operation is detected, invoke the payment barcode display interface in the payment application, so as to display the barcode image used
30 for payment on the screen of the user equipment.