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(71) Applicant(s)
Samsung Electronics Co., Ltd.

(72) Inventor(s)
Cha, Sang-Ok;Kim, Dong-Woo;Kim, Young-Ri;Yoo, Ji-Yeon;Lee, Ju-Youn

(74) Agent / Attorney
Phillips Ormonde Fitzpatrick, L 16 333 Collins St, Melbourne, VIC, 3000

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(71) Applicant: **SAMSUNG ELECTRONICS CO., LTD.**
[KR/KR]; 129, Samsung-ro, Yeongtong-gu, Suwon-si,
Gyeonggi-do 443-742 (KR).

(72) Inventors: **CHA, Sang-ok**; 102-208 Hanyang Apt., Gwon-
seon-dong, Gwonseon-gu, Suwon-si, Gyeonggi-do 441-
718 (KR). **KIM, Dong-woo**; 103-206 Woobang Lilac
Mansion, Seongdang 2-dong, Dalseo-gu, Daegu 704-080
(KR). **KIM, Young-ri**; #205, 514-2 Gokbanjeong-dong,
Gwonseon-gu, Suwon-si, Gyeonggi-do 441-400 (KR).
YOO, Ji-yeon; 1256-2, Maetan 3-dong, Yeongtong-gu,
Suwon-si, Gyeonggi-do 443-848 (KR). **LEE, Ju-youn**;
104-201 I-Park Bundang, Jeongja-dong, Bundang-gu,
Seongnam-si, Gyeonggi-do 463-859 (KR).

(74) Agent: **Y.P.LEE, MOCK & PARTNERS**; 12F Daelim
Acrotel, 13 Eonju-ro 30-gil, Gangnam-gu, Seoul 135-971
(KR).

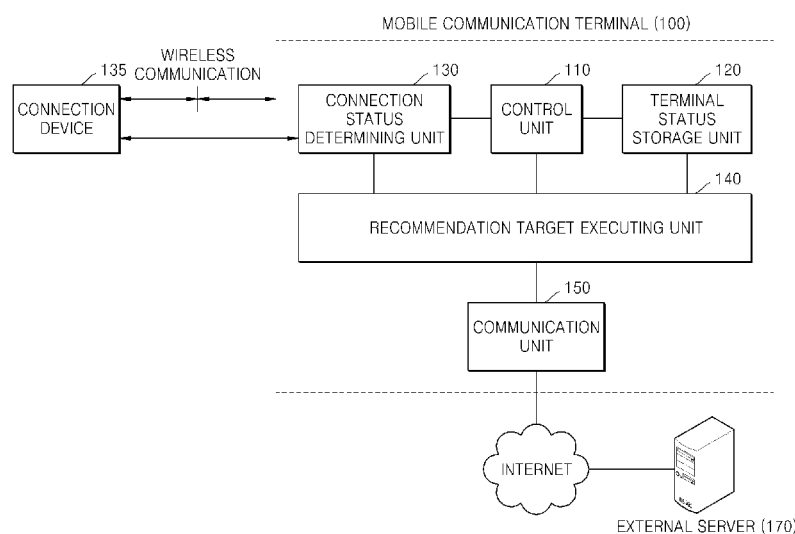
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(54) Title: MOBILE COMMUNICATION TERMINAL AND METHOD OF RECOMMENDING APPLICATION OR CONTENT



(57) Abstract: A mobile communication terminal and a method of recommending an application or content by providing information regarding a terminal status obtained by the mobile communication terminal when a connection device is connected to the mobile communication terminal without having to look for the application or content. The mobile communication terminal includes a connection status determining unit which determines a connection status of a connection device and the mobile communication terminal, a terminal status storage unit which stores information regarding a terminal status of the mobile communication terminal; and a recommended target executing unit which determines a recommended application based on the connection status and the information regarding the terminal status of the mobile communication terminal.



Description

Title of Invention: MOBILE COMMUNICATION TERMINAL AND METHOD OF RECOMMENDING APPLICATION OR CONTENT

Technical Field

- [1] Apparatuses and methods consistent with exemplary embodiments relate to a mobile communication terminal and a method of recommending content or an application to a user, and more particularly, to a mobile communication terminal and a method of selecting and recommending content or an application by using information regarding a connection status of a connection device and the mobile communication terminal, and a terminal status of the mobile communication terminal collected by the mobile communication terminal.

Background Art

- [2] In the related art, to connect and use mobile communication terminals and connection devices, users connect mobile communication terminals and connection devices, execute applications to use connection devices connected to mobile communication terminals, and apply settings for the use of connection devices by using the executed applications.
- [3] Users also personally search for applications or content to use connection devices after applying settings.

Disclosure of Invention

Technical Problem

- [4] Users are inconveniently required to carry out additional operations after connecting connection devices to mobile communication terminals in order to use the connection devices.
- [5] Furthermore, if users use the connection devices by using applications, mobile communication terminals conventionally do not effectively utilize information regarding terminal statuses obtained by using connection devices connected to mobile communication terminals.
- [6] Therefore, mobile communication terminals or methods of effectively recommending applications or content by using connection statuses of connection devices and statuses of mobile communication terminals, when connection devices are connected to mobile communication terminals, are needed.

Solution to Problem

- [7] A mobile communication terminal for recommending an application, the mobile

communication terminal including a connection status determining unit which determines a connection status of a connection device and the mobile communication terminal, a terminal status storage unit which stores information regarding a terminal status of the mobile communication terminal; and a recommended target executing unit which determines a recommended application based on the connection status and the information regarding the terminal status of the mobile communication terminal, wherein the information regarding the terminal status of the mobile communication terminal includes at least one of information regarding a movement of the mobile communication terminal and information regarding an environment of a location where the mobile communication terminal is located, and wherein the recommended target executing unit accumulates and stores the information regarding the terminal status of the mobile communication terminal and determines and executes the recommended application based on the accumulated and stored information.

Advantageous Effects of Invention

- [8] Mobile communication terminals or methods of effectively recommending applications or content by using connection statuses of connection devices and statuses of mobile communication terminals, when connection devices are connected to mobile communication terminals.

Brief Description of Drawings

- [9] The above and other aspects will become more apparent by describing in detail exemplary embodiments with reference to the attached drawings in which:
- [10] FIG. 1 is a block diagram of a system including a mobile communication terminal for recommending and executing an application or content when a connection device is connected to the mobile communication terminal, according to an exemplary embodiment;
- [11] FIG. 2 is a flowchart illustrating a method of recommending and executing an application or content when a connection device is connected to a mobile communication terminal, according to an exemplary embodiment;
- [12] FIG. 3 is a table illustrating accumulated and stored information regarding an application or content executed corresponding to information regarding a connection status of a connection device or a terminal status of a mobile communication terminal, according to an exemplary embodiment;
- [13] FIG. 4 is a flowchart illustrating a method of executing a recommended application when earphones are connected to a mobile communication terminal, according to an exemplary embodiment;
- [14] FIG. 5 illustrates an example of executing an application by using the method of FIG. 4 when earphones are connected to a mobile communication terminal;

- [15] FIG. 6 illustrates an example of executing an application when an electronic pen is taken out of a mobile communication terminal after an image is captured by using the mobile communication terminal;
- [16] FIG. 7 illustrates an example of changing an input mode of a key pad when an electronic pen is taken out of a mobile communication terminal during an input mode;
- [17] FIG. 8 illustrates an example of executing a memo related application when an electronic pen is taken out of a mobile communication terminal; and
- [18] FIG. 9 illustrates an example of executing a recommended application when a mobile communication terminal is connected to a holder.

Best Mode for Carrying out the Invention

- [19] Exemplary embodiments provide a mobile communication terminal and a method of recommending an application or content to provide a platform capable of selecting and executing the application or content with respect to a connection device connected to the mobile communication terminal.
- [20] According to an aspect of an exemplary embodiment, there is provided a mobile communication terminal comprising: a connection status determining unit which determines a connection status of a connection device and the mobile communication terminal; a terminal status storage unit which stores information regarding a terminal status of the mobile communication terminal; and a recommended target executing unit which determines a list of at least one available application based on the connection status, wherein the information regarding the terminal status of the mobile communication terminal comprises at least one of information regarding a movement of the mobile communication terminal and information regarding an environment of a location where the mobile communication terminal is located, wherein the recommended target executing unit accumulates and stores the information regarding the terminal status of the mobile communication terminal and determines and executes a recommended application from among the list of the at least one available application based on the accumulated and stored information.
- [21] The recommended target executing unit may determine and execute the recommended application based on the determined connection status as the connection device is connected to the mobile communication terminal.
- [22] The connection status may include at least one of whether the mobile communication terminal and the connection device are connected to each other, a type of the

connection device connected to the mobile communication terminal, and a connection method connecting the mobile communication terminal with the connection device.

- [23] The terminal status storage unit may confirm and store the terminal status of the mobile communication terminal by using at least one of a movement recognition sensor, an image sensor, a sound sensor, a touch sensor, a temperature sensor, a gravity sensor, and a location sensor. The information regarding the terminal status includes at least one of a current time, an image received by the mobile communication terminal through the image sensor, a temperature of the mobile communication terminal measured through the temperature sensor, sound received by the mobile communication terminal, information regarding a location of the mobile communication terminal, illumination of the location of the mobile communication terminal, an angle formed between the mobile communication terminal and a horizontal plane, an application currently being used in the mobile communication terminal, a current status of the mobile communication terminal being used, and user information.
- [24] The recommended target executing unit may provide a server with the connection status and the information regarding the terminal status, receive recommended application identification information from the server, and determine the recommended application. The recommended target executing unit may provide the server with a list of applications installed in the mobile communication terminal, and the recommended application includes at least one of the applications included in the list.
- [25] The connection device and the mobile communication terminal may be connected to each other through a wireless communication.
- [26] In a case where the connection status and the information regarding the terminal status of the mobile communication terminal correspond to a plurality of recommended applications, the recommended target executing unit may output a list of the plurality of recommended applications, receive a user's selection from the output list of the plurality of recommended applications, and determine the recommended application.
- [27] According to an aspect of another exemplary embodiment, there may be provided a method of recommending an application in a mobile communication terminal, the method including obtaining information regarding a terminal status of the mobile communication terminal, accumulating and storing the information regarding the terminal status of the mobile communication terminal, determining a connection status of a connection device and the mobile communication terminal, and determining and

executing a recommended application based on the connection status and the accumulated and stored information regarding the terminal status of the mobile communication terminal, wherein the information regarding the terminal status of the mobile communication terminal includes at least one of information regarding a movement of the mobile communication terminal and information regarding an environment of a location where the mobile communication terminal is located.

[28] According to another aspect of an exemplary embodiment, there is provided a mobile communication terminal comprising: a connection status determining unit which determines a connection status of a connection device and the mobile communication terminal; a terminal status storage unit which obtains and stores information regarding a terminal status of the mobile communication terminal; and a recommended target executing unit which determines a list of at least one available application based on the connection status, wherein the information regarding the terminal status of the mobile communication terminal comprises at least one of information regarding a movement of the mobile communication terminal and information regarding an environment of a location where the mobile communication terminal is located, wherein the terminal status storage unit accumulates and stores the information regarding the terminal status of the mobile communication terminal, and wherein the recommended target executing unit determines a recommended application from among the list of the at least one available application based on the accumulated and stored information regarding the terminal status of the mobile communication terminal, determines recommended content based on the connection status and the accumulated and stored information regarding the terminal status of the mobile communication terminal, executes the recommended application, and executes the determined recommended content using the executed application.

[29] A method of recommending an application in a mobile communication terminal, the method comprising: obtaining information regarding a terminal status of the mobile communication terminal; accumulating and storing the information regarding the terminal status of the mobile communication terminal; determining a connection status of a connection device and the mobile communication terminal; determining a list of at least one available application based on the connection status; and determining and executing a recommended application from among the list of the at least one available application based on the accumulated and stored information regarding the terminal status of the mobile communication terminal, wherein the information regarding the

terminal status of the mobile communication terminal comprises at least one of information regarding a movement of the mobile communication terminal and information regarding an environment of a location where the mobile communication terminal is located.

Mode for the Invention

- [30] The above and other aspects will become more apparent by describing in detail exemplary embodiments with reference to the attached drawings in which:
- [31] FIG. 1 is a block diagram of a system including a mobile communication terminal for recommending and executing an application or content when a connection device is connected to the mobile communication terminal, according to an exemplary embodiment;
- [32] FIG. 2 is a flowchart illustrating a method of recommending and executing an ap-

plication or content when a connection device is connected to a mobile communication terminal, according to an exemplary embodiment;

[33] FIG. 3 is a table illustrating accumulated and stored information regarding an application or content executed corresponding to information regarding a connection status of a connection device or a terminal status of a mobile communication terminal, according to an exemplary embodiment;

[34] FIG. 4 is a flowchart illustrating a method of executing a recommended application when earphones are connected to a mobile communication terminal, according to an exemplary embodiment;

[35] FIG. 5 illustrates an example of executing an application by using the method of FIG. 4 when earphones are connected to a mobile communication terminal;

[36] FIG. 6 illustrates an example of executing an application when an electronic pen is taken out of a mobile communication terminal after an image is captured by using the mobile communication terminal;

[37] FIG. 7 illustrates an example of changing an input mode of a key pad when an electronic pen is taken out of a mobile communication terminal during an input mode;

[38] FIG. 8 illustrates an example of executing a memo related application when an electronic pen is taken out of a mobile communication terminal; and

[39] FIG. 9 illustrates an example of executing a recommended application when a mobile communication terminal is connected to a holder.

[40] DETAILED DESCRIPTION

[41] Hereinafter, exemplary embodiments will be described in greater detail with reference to the accompanying drawings so that those of ordinary skill in the art can accomplish the exemplary embodiments. The exemplary embodiments may, however, be embodied in many different forms and should not be construed as being limited to the embodiments set forth herein. In the following description, well-known functions or constructions are not described in detail since they would obscure the exemplary embodiments with unnecessary detail. Throughout the drawings, whenever the same element reappears in a subsequent drawing, it is denoted by the same reference numeral.

[42] Throughout this specification and the claims that follow, when it is described that an element is “coupled” to another element, the element may be “directly coupled” to the other element or “electrically coupled” to the other element through a third element. In addition, unless explicitly described to the contrary, the word “comprise” and variations such as “comprises” or “comprising”, will be understood to imply the inclusion of stated elements but not the exclusion of any other elements.

[43] Expressions such as “at least one of,” when preceding a list of elements, modify the entire list of elements and do not modify the individual elements of the list.

- [44] The exemplary embodiments will now be described more fully with reference to the accompanying drawings
- [45] FIG. 1 is a block diagram of a system including a mobile communication terminal 100 for recommending and executing an application or content when a connection device 135 is connected to the mobile communication terminal 100, according to an exemplary embodiment. In FIG. 1, the system is configured to determine and execute a recommendation regarding the application or content included in the mobile communication terminal 100 based on information regarding a connection status of the connection device 135 and a terminal status of the mobile communication terminal 100.
- [46] A terminal status storage unit 120 may obtain and store information regarding an application or content that is executed in the mobile communication terminal 100. The application may reside in a memory embedded in the mobile communication terminal 100 and may be executed in the mobile communication terminal 100.
- [47] The terminal status may be information regarding a status of the mobile communication terminal 100 or information on an environment and surroundings of the mobile communication terminal 100.
- [48] The information regarding the terminal status of the mobile communication terminal 100 or information on the environment and surroundings of the mobile communication terminal 100 may include metadata of a used application or content. The metadata may include one or more pieces of information regarding a time at which the application or content is used, a user's preference for the application or content, frequency of use of the application or content, and content sharing with other users.
- [49] Also, the information regarding the terminal status of the mobile communication terminal 100 or information on the environment and surroundings of the mobile communication terminal 100 may include one or more pieces of location information regarding a location of the mobile communication terminal 100, recognition information regarding a physical movement of the mobile communication terminal 100, sound input information, temperature information, image information, illumination information, and information regarding a horizontal angle and atmospheric pressure of the mobile communication terminal 100.
- [50] The location information may include information indicating the location of the mobile communication terminal 100, such as cell-ID information, Wi-Fi access point (AP) information, and global positioning system (GPS) coordinate information.
- [51] The recognition information regarding the physical movement of the mobile communication terminal 100 may include information regarding a movement of the mobile communication terminal 100, such as shaking, vibration, etc., which is recognized by using a gravity sensor, an acceleration sensor, etc. that is embedded in the mobile communication terminal 100.

munication terminal 100.

- [52] The sound input information may include information regarding sound from surroundings of the mobile communication terminal 100, which is received using a microphone, etc.
- [53] The temperature information may include information regarding a temperature that may be sensed by the mobile communication terminal 100 by using a temperature sensor embedded in the mobile communication terminal 100.
- [54] The image information may include information regarding an image captured using a camera embedded in the mobile communication terminal 100.
- [55] The illumination information may include information regarding the illumination of light from surroundings of the mobile communication terminal 100, which is sensed using the camera or an illumination sensor embedded in the mobile communication terminal 100.
- [56] The horizontal angle of the mobile communication terminal 100 means an angle formed between the mobile communication terminal 100 and a horizontal plane.
- [57] The information regarding the atmospheric pressure may include information regarding an atmospheric pressure of surroundings of the mobile communication terminal 100, which is measured by the mobile communication terminal 100.
- [58] To obtain the information described above, the terminal status storage unit 120 may include at least one of an acceleration sensor, an image sensor, a sound sensor, a temperature sensor, a gravity sensor, a location sensor, and a barometer.
- [59] Furthermore, the information regarding the terminal status of the mobile communication terminal 100 or information on the environment and surroundings of the mobile communication terminal 100 may include information regarding an application or content that is being currently used in the mobile communication terminal 100.
- [60] The information regarding the terminal status of the mobile communication terminal 100 or information on the environment and surroundings of the mobile communication terminal 100 may also include information regarding settings of the mobile communication terminal 100. For example, the information may include information regarding settings of the mobile communication terminal 100, such as a sleep mode to minimize use of a processor of the mobile communication terminal 100 and reduce power consumption of the mobile communication terminal 100, or an input mode of a keypad.
- [61] The information regarding the terminal status of the mobile communication terminal 100 or information on the environment and surroundings of the mobile communication terminal 100 may also include information regarding a user of the mobile communication terminal 100, such as the user's age, sex, job, etc.
- [62] In a case where a recommended target executing unit 140 requests information regarding the terminal status stored in the terminal status storage unit 120 in order to

determine an application or content corresponding to the connection device 135, the terminal status storage unit 120 may provide the recommended target executing unit 140 with the requested information.

- [63] In an exemplary embodiment, the terminal status storage unit 120 may accumulate and store the information regarding the terminal status. The recommended target executing unit 140 may use the information regarding the terminal status that is accumulated and stored in the terminal status storage unit 120 as information used to determine the application or content corresponding to the connection device 135. For example, in a case where the mobile communication terminal 100 is located in a library or a school, earphones are connected thereto, and an application or content relating to education is repeatedly executed using the mobile communication terminal 100. Information regarding the executed application or content may be accumulated and stored in the terminal status storage unit 120.
- [64] The information regarding the executed application or content may include a type of the executed application or content, a time at which the application or content is executed, and information regarding the terminal status of the mobile communication terminal 100 at the time at which the application or content is executed.
- [65] For example, the mobile communication terminal 100 may use the accumulated and stored information to execute the application or content relating to education if the earphones are connected to the mobile communication terminal 100 in a library or a school in the future.
- [66] A connection status determining unit 130 determines the connection status of the mobile communication terminal 100 and the connection device 135. The connection status of the mobile communication terminal 100 and the connection device 135 may include at least one of information regarding whether the mobile communication terminal 100 and the connection device 135 are connected to each other, information regarding a type of the connection device 135 connected to the mobile communication terminal 100, and information regarding a connection method connecting the mobile communication terminal 100 and the connection device 135.
- [67] The information regarding whether the mobile communication terminal 100 and the connection device 135 are connected to each other may be sensed and generated by the connection status determining unit 130.
- [68] In a case where the connection status determining unit 130 determines whether the mobile communication terminal 100 and the connection device 135 are connected to each other or are disconnected from each other, the connection status determining unit 130 may renew the connection status of the connection device 135 and provide the recommended target executing unit 140 with information regarding the connection status.
- [69] The connection device 135 connected to the mobile communication terminal 100

does not have to be a type which operates independently from the mobile communication terminal 100. For example, connection device 135 may include an electronic pen that may be used as an input device of the mobile communication terminal 100, earphones, an antenna embedded in or externally connected to the mobile communication terminal 100, a holder of the mobile communication terminal 100, a wrist watch, and a device connected through a cable such as a universal serial bus (USB).

[70] The information regarding the connection method of the mobile communication terminal 100 and the connection device 135 may include information regarding whether the connection device 135 is connected to the mobile communication terminal 100 by wire or wirelessly. For example, in a case where the connection device 135 is connected to the mobile communication terminal 100 by wire, the information regarding whether the connection device 135 is connected to the mobile communication terminal 100 by wire or wirelessly may include information regarding a part of the mobile communication terminal 100 to which the connection device 135 is connected. For example, the information regarding whether the connection device 135 is connected to the mobile communication terminal 100 by wire or wirelessly may include information regarding whether the connection device 135 is connected to an earphone plug socket of the mobile communication terminal 100 or is connected to the mobile communication terminal 100 through a cable.

[71] Also, in a case where the connection device 135 is connected to the mobile communication terminal 100 wirelessly, the information regarding whether the connection device 135 is connected to the mobile communication terminal 100 by wire or wirelessly may include information regarding a wireless communication method by which the connection device 135 is connected to the mobile communication terminal 100. For example, the information regarding whether the connection device 135 is connected to the mobile communication terminal 100 by wire or wirelessly may include information regarding a wireless communication method, such as Bluetooth, Zigbee, or near field communication (NFC), by which the connection device 135 is connected to the mobile communication terminal 100.

[72] The recommended target executing unit 140 may receive the information regarding the connection status of the connection device 135 from the connection status determining unit 130 and determine the application or content corresponding to the connection device 135. In this regard, the recommended target executing unit 140 may determine the application or content by using the information regarding the terminal status received from the terminal status storage unit 120. For example, in a case where the mobile communication terminal 100 is connected to earphones corresponding to the connection device 135, if there is no information regarding the terminal status, the recommended target executing unit 140 may execute an application relating to music,

and, if a motion of the user who is jogging is recognized, the recommended target executing unit 140 may execute an application relating to exercise.

[73] In a case where the recommended target executing unit 140 determines to execute the application corresponding to the connection device 135, the recommended target executing unit 140 executes the application. In a case where the recommended target executing unit 140 determines to execute the content corresponding to the connection device 135, the recommended target executing unit 140 may execute the determined content based on the executed application.

[74] According to another exemplary embodiment, the recommended target executing unit 140 may execute an application for editing a photo captured by using a photo capture application if an electronic pen is taken out of the mobile communication terminal 100.

[75] According to another exemplary embodiment, the recommended target executing unit 140 may convert a text input mode of the mobile communication terminal 100 into a cursive recognition mode in which an electronic pen is used to input text by using a keypad, if the electronic pen is taken out of the mobile communication terminal 100.

[76] According to another exemplary embodiment, if the electronic pen is taken out in the sleep mode, a most frequently used memo application may be executed.

[77] According to another embodiment, if the user connects the earphones to the mobile communication terminal 100 and starts running, an application relating to exercise or music may be executed through a movement recognition of the mobile communication terminal 100.

[78] According to another exemplary embodiment, if an antenna which is embedded in the mobile communication terminal 100 is extended, content relating to digital multimedia broadcasting (DMB) may be executed, and newly updated content or frequently used content may be recommended.

[79] According to another exemplary embodiment, in a case where a computer is connected to the mobile communication terminal 100 through a USB cable, if the computer is at a home, the computer may be synchronized with a personal server and cloud, and, if the computer is in an office, the computer may be synchronized with an office server and cloud.

[80] According to another exemplary embodiment, in a case where the mobile communication terminal 100 is connected to a holder, a sleep status of the mobile communication terminal 100 may be determined by using the location information of the mobile communication terminal 100, the movement recognition of the mobile communication terminal 100, a current time, etc., and an application for inspecting the sleep state of the user may be executed. In a case where the user drives a car while connecting the mobile communication terminal 100 to a holder in the car, a car driving

status of the mobile communication terminal 100 may be determined and content relating to driving may be provided.

- [81] According to another exemplary embodiment, in a case where the mobile communication terminal 100 is connected to a wrist watch, a schedule management application may be executed. Also, in a case where the user runs by connecting the wrist watch to the mobile communication terminal 100, an application relating to exercise may be executed.
- [82] According to another exemplary embodiment, in a case where the user of the mobile communication terminal 100 rides in the car while carrying the mobile communication terminal 100, a car riding status may be recognized through the NFC between the mobile communication terminal 100 and the car, and content relating to driving may be provided.
- [83] According to another exemplary embodiment, the recommended target executing unit 140 may determine the application or content by using the terminal status accumulated and stored in the terminal status storage unit 120. That is, if there is an application or content that is repeatedly used with respect to a connection specific status of a connection device and a specific status of a terminal, the recommended target executing unit 140 may determine to execute the repeatedly used application or content in the status of the specific terminal when the connection device is connected to the terminal.
- [84] According to another exemplary embodiment, the recommended target executing unit 140 may transmit the connection status of the mobile communication terminal 100 and the connection device 135 and the terminal status of the mobile communication terminal 100 to an external server 170 over a communication network, receive information regarding a recommended application or content from the external server 170, and determine a recommended application or content. Also, the recommended target executing unit 140 may transmit a list of applications installed in the mobile communication terminal 100 and content embedded in the mobile communication terminal 100 to the external server 170, together with the connection status of the mobile communication terminal 100 and the connection device 135 and the terminal status of the mobile communication terminal 100.
- [85] A communication unit 150 may transmit and receive information between the mobile communication terminal 100 and the external server 170 over the communication network. The communication network may be a communication network used to transmit and receive data between devices, such as the Internet, NFC, a mobile communication network, etc.
- [86] The terminal status storage unit 120 may store the obtained list of applications installed in the mobile communication terminal 100 and content embedded in the

mobile communication terminal 100.

- [87] The external server 170 may receive the connection status of the mobile communication terminal 100 and the connection device 135 and the terminal status of the mobile communication terminal 100 through the communication unit 150 of the mobile communication terminal 100. Also, the external server 170 may determine the recommended application or content by using the received connection status of the mobile communication terminal 100 and the connection device 135 and terminal status of the mobile communication terminal 100, and transmit information regarding the recommended application or content to the mobile communication terminal 100. In this regard, in a case where the external server 170 receives the list of applications installed in the mobile communication terminal 100 and content embedded in the mobile communication terminal 100, the external sever 170 may determine the recommended application or content among applications or content included in the received list.
- [88] According to another exemplary embodiment, in a case where the recommended target executing unit 140 determines a plurality of recommendations, the recommended target executing unit 140 may output a list of the plurality of recommendations, receive a user's selection of an application or content to be executed from the list of the plurality of recommendations, and execute the application or content.
- [89] A control unit 110 controls each element of the mobile communication terminal 100.
- [90] FIG. 2 is a flowchart illustrating a method of recommending and executing an application or content when the connection device 135 is connected to the mobile communication terminal 100, according to an exemplary embodiment. The method of recommending and executing the application or content when the connection device 135 is connected to the mobile communication terminal 100 according to the exemplary embodiment may be performed by the mobile communication terminal 100 described with reference to FIG. 1.
- [91] The mobile communication terminal 100 obtains information regarding a terminal status (operation S210). The information regarding the terminal status may be information regarding a status of the mobile communication terminal 100 or information on an environment and surroundings of the mobile communication terminal 100.
- [92] The information regarding the status of the mobile communication terminal 100 or information on the environment and surroundings of the mobile communication terminal 100 may include metadata of a used application or content. The metadata may include one or more pieces of information about a time at which the application or content is used, a user's preference for the application or content, a frequency of use of the application or content, and information regarding the content sharing with other users.
- [93] Also, the information regarding the status of the mobile communication terminal 100

or information on the environment and surroundings thereof may include one or more pieces of location information regarding a location of the mobile communication terminal 100, recognition information regarding a physical movement thereof, sound input information, temperature information, image information, illumination information, and information regarding a horizontal angle and atmospheric pressure thereof.

- [94] The location information may include information indicating the location of the mobile communication terminal 100, such as cell-ID information, Wi-Fi access point (AP) information, and GPS coordinate information.
- [95] The recognition information regarding the physical movement of the mobile communication terminal 100 may include information regarding a movement thereof such as shaking, vibration, etc. recognized by using a gravity sensor, an acceleration sensor, etc. embedded in the mobile communication terminal 100.
- [96] The sound input information may include information regarding sound from surroundings of the mobile communication terminal 100, which is received using a microphone, etc.
- [97] The temperature information may include information regarding a temperature that may be sensed by the mobile communication terminal 100 by using a temperature sensor embedded in the mobile communication terminal 100. The image information may include information regarding an image captured using a camera embedded in the mobile communication terminal 100.
- [98] The illumination information may include information regarding the illumination of light from surroundings of the mobile communication terminal 100 that is sensed using the camera or an illumination sensor embedded in the mobile communication terminal 100. The horizontal angle of the mobile communication terminal 100 means an angle formed between the mobile communication terminal 100 and a horizontal plane.
- [99] The information regarding the atmospheric pressure may include information regarding an atmospheric pressure of surroundings of the mobile communication terminal 100, which is measured by the mobile communication terminal 100.
- [100] To obtain the information described above, at least one of an acceleration sensor, an image sensor, a sound sensor, a temperature sensor, a gravity sensor, a location sensor, and a barometer may be used.
- [101] Furthermore, the information regarding the terminal status of the mobile communication terminal 100 or information on the environment and surroundings of the mobile communication terminal 100 may include information regarding an application or content that is being currently used in the mobile communication terminal 100.
- [102] The information regarding the status of the mobile communication terminal 100 or information on the environment and surroundings of the mobile communication

terminal 100 may also include information regarding settings of the mobile communication terminal 100. For example, the information may include information regarding settings of the mobile communication terminal 100, such as a sleep mode to minimize use of a processor of the mobile communication terminal 100 and reduce power consumption of the mobile communication terminal 100 or an input mode of a keypad.

[103] The information regarding the status of the mobile communication terminal 100 or information on the environment and surroundings of the mobile communication terminal 100 may also include information regarding a user of the mobile communication terminal 100, such as the user's age, sex, job, etc.. The obtained information regarding the terminal status may be accumulated and stored in the terminal status storage unit 120.

[104] Thereafter, a connection status of the mobile communication terminal 100 and the connection device 135 is determined (operation S220). The connection status of the mobile communication terminal 100 and the connection device 135 includes at least one of whether the mobile communication terminal 100 and the connection device 135 are connected to each other, a type of the connection device 135 connected to the mobile communication terminal 100, and a connection method of the mobile communication terminal 100 and the connection device 135.

[105] In a case where the connection status changes since the mobile communication terminal 100 and the connection device 135 are connected to each other or are disconnected from each other, an application or content corresponding to the connection status of the mobile communication terminal 100 and the information regarding the terminal status is selected (operation S230). If the application is selected, the recommended target executing unit 140 executes the application, and, if the content is selected, the recommended target executing unit 140 executes an application used to execute the content based on the executed application (operation S240).

[106] FIG. 3 is a table illustrating accumulated and stored information regarding an application or content executed according to information regarding a connection status of the connection device 135 or a terminal status of the mobile communication terminal 100, according to an exemplary embodiment.

[107] Referring to FIG. 3, information regarding the terminal status and the executed application or content may be stored in the terminal status storage unit 120. Also, in a case where the stored information includes an application or content that is repeatedly used in the terminal status of the mobile communication terminal 100, if the connection device 135 is connected to the mobile communication terminal 100 in the corresponding terminal status, the repeatedly used application or content may be executed.

[108] Although not shown, the information stored in the terminal status storage unit 120

may include information regarding the connection status of the connection device 135. For example, as shown in FIG. 3, in a case where information regarding a repeatedly executed application A, by connection of the connection device 135 to the mobile communication terminal 100, is accumulated and stored when location information is (xx, xx), motion recognition information is XYZ, and a temperature is 25°C at times 1, 3, and 5, the connection device 135 may be connected to the mobile communication terminal 100, and the application A may be executed.

[109] FIG. 4 is a flowchart illustrating a method of executing a recommended application when earphones, which is the connection device 135, are connected to the mobile communication terminal 100, according to an exemplary embodiment.

[110] Information regarding a terminal status of the mobile communication terminal 100 is obtained (operation S410). In this regard, the information regarding the terminal status may include location information of the mobile communication terminal 100.

[111] Thereafter, if the earphones are connected to the mobile communication terminal 100 (operation S420), it may be determined whether the location information indicates movement by analyzing the location information of the mobile communication terminal 100 (operation S430). The recommended application to be executed may be selected from applications corresponding to the connection of the earphones provided according to a result of the determination.

[112] For example, applications corresponding to the connection of the earphones may include a music reproduction application, a video reproduction application, an exercise related application, an education related application, and the like.

[113] Next, if the location information indicates movement (operation S440), the music reproduction application may be executed to reproduce a music file (operation S445). For example, in a case where the location information indicates movement at a speed of 2 km and 10 km an hour, the music reproduction application may be executed to reproduce a music file having a slow beat, and, in a case where the location information indicates movement at a speed of 10 km and 20 km an hour, the music reproduction application may be executed to reproduce a music file having a fast beat suitable for a user who is doing exercise.

[114] Furthermore, in a case where the location information indicates movement has stopped, a map related application may be executed or information regarding a location where the mobile communication terminal 100 stops moving may be collected from a database (operation S450). In a case where the location information stops moving at a place that is determined as a school or a library (operation S455), an education related application may be executed (operation S460).

[115] In this regard, in a case where information regarding an application or content executed at a specific moving speed or at the place where the location information

indicates movement has stopped is accumulated and stored in the terminal status storage unit 120, the application to be executed may be selected from the information. For example, even if it is not determined that the particular place where the location information stops moving is a school, in a case where the earphones are connected to the mobile communication terminal 100 at the particular place, and information regarding an education related application that is repeatedly executed is stored in the terminal status storage unit 120, the earphones may be connected to the mobile communication terminal 100 at the particular place to execute the education related application.

[116] FIG. 5 illustrates an example of executing an application or content by using the method of FIG. 4.

[117] As shown in FIG. 5, when earplugs are connected to a mobile communication terminal 100 (501), if location information indicates movement at a certain speed, then a music reproduction application can be executed (502). If location information indicates that movement has stopped in a location which is a school or library (503), then an education related application may be executed (504).

[118] FIGS. 6 through 8 illustrates examples of executing an application or content by sensing that an electronic pen is taken out of the mobile communication terminal 100 when the electronic pen is taken out of the mobile communication terminal 100.

[119] Referring to FIG. 6, after an image is captured by using the mobile communication terminal 100 (600), when it is sensed that the electronic pen is taken out of the mobile communication terminal 100 (610), the mobile communication terminal 100 may execute an application for editing the captured image (620).

[120] Referring to FIG. 7, when the mobile communication terminal 100 is set in an input mode of a key pad (700), and it is sensed that the electronic pen is taken out of the mobile communication terminal 100 (710), the mobile communication terminal 100 may be changed to a cursive input mode (720).

[121] Referring to FIG. 8, when the mobile communication terminal 100 is set in a sleep mode, which is a power saving mode (800), and it is sensed that the electronic pen is taken out of the mobile communication terminal 100 (810), the mobile communication terminal 100 may be released from the sleep mode and may execute an application most frequently used when the electronic pen is taken out of the mobile communication terminal 100 (820).

[122] FIG. 9 illustrates another example of executing a recommended application when the mobile communication terminal 100 is connected to a holder 901 that is the connection device 135.

[123] In a case where the mobile communication terminal 100 is connected to the holder, the recommended application may be determined based on time, location, and motion information. Referring to FIG. 9, in a case where the mobile communication terminal

100 is connected to the holder 901 in a house of a user of the mobile communication terminal 100 (902), a sleep check related application may be executed (903), and, in a case where the mobile communication terminal 100 is being moved while on the road during the daytime, and vibration of the mobile communication terminal 100 is sensed (904), a driving related application may be executed (905).

[124] While exemplary embodiments have been particularly shown and described, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without departing from the spirit and scope of the inventive concept as defined by the following claims.

[125]

[126]

Claims

[Claim 1]

A mobile communication terminal comprising:
a connection status determining unit which determines a connection status of a connection device and the mobile communication terminal;
a terminal status storage unit which stores information regarding a terminal status of the mobile communication terminal; and
a recommended target executing unit which determines a list of at least one available application based on the connection status,
wherein the information regarding the terminal status of the mobile communication terminal comprises at least one of information regarding a movement of the mobile communication terminal and information regarding an environment of a location where the mobile communication terminal is located,
wherein the recommended target executing unit accumulates and stores the information regarding the terminal status of the mobile communication terminal and determines and executes a recommended application from among the list of the at least one available application based on the accumulated and stored information.

[Claim 2]

A mobile communication terminal comprising:
a connection status determining unit which determines a connection status of a connection device and the mobile communication terminal;
a terminal status storage unit which obtains and stores information regarding a terminal status of the mobile communication terminal; and
a recommended target executing unit which determines a list of at least one available application based on the connection status,
wherein the information regarding the terminal status of the mobile communication terminal comprises at least one of information regarding a movement of the mobile communication terminal and information regarding an environment of a location where the mobile communication terminal is located,
wherein the terminal status storage unit accumulates and stores the information regarding the terminal status of the mobile communication terminal, and

wherein the recommended target executing unit determines a recommended application from among the list of the at least one available application based on the accumulated and stored information regarding the terminal status of the mobile communication terminal, determines recommended content based on the connection status and the accumulated and stored information regarding the terminal status of the mobile communication terminal, executes the recommended application, and executes the determined recommended content using the executed application.

[Claim 3]

The mobile communication terminal of claim 1 or 2, wherein the recommended target executing unit determines and executes the recommended application based on the determined connection status as the connection device is connected to the mobile communication terminal.

[Claim 4]

The mobile communication terminal of claim 1 or 2, wherein the connection status comprises at least one of whether the mobile communication terminal and the connection device are connected to each other, a type of the connection device connected to the mobile communication terminal, and a connection method connecting the mobile communication terminal with the connection device.

[Claim 5]

The mobile communication terminal of claim 1 or 2, wherein the terminal status storage unit confirms and stores the terminal status of the mobile communication terminal by using at least one of a movement recognition sensor, an image sensor, a sound sensor, a touch sensor, a temperature sensor, a gravity sensor, and a location sensor, and wherein the information regarding the terminal status comprises at least one of a current time, an image received by the mobile communication terminal through the image sensor, a temperature of the mobile communication terminal measured through the temperature sensor, sound received by the mobile communication terminal, information regarding a location of the mobile communication terminal, illumination of the location of the mobile communication terminal, an angle formed between the mobile communication terminal and a horizontal plane, an application currently being used in the mobile communication terminal,

- a current status of the mobile communication terminal being used, and user information.
- [Claim 6] The mobile communication terminal of claim 1 or 2, wherein the recommended target executing unit provides a server with the connection status and the information regarding the terminal status, receives recommended application identification information from the server, and determines the recommended application.
- [Claim 7] The mobile communication terminal of claim 6, wherein the recommended target executing unit provides the server with a list of applications installed in the mobile communication terminal, wherein the recommended application comprises at least one of the applications included in the list.
- [Claim 8] The mobile communication terminal of claim 1 or 2, wherein if the connection status and the information regarding the terminal status of the mobile communication terminal correspond to a plurality of recommended applications, the recommended target executing unit outputs a list of the plurality of recommended applications, receives a selection from the output list of the plurality of recommended applications, and determines the recommended application.
- [Claim 9] The mobile communication terminal of claim 1 or 2, wherein the connection device is a pen used as an input device, wherein the connection status indicates whether the pen used as the input device is connected to the mobile communication terminal, wherein the terminal status comprises at least one of information regarding an application that is being executed in the mobile communication terminal and information regarding settings of the mobile communication terminal.
- [Claim 10] The mobile communication terminal of claim 9, wherein, if the information regarding the application that is being executed in the mobile communication terminal is an application relating to image capture, and if the pen used as the input device is disconnected from the mobile communication terminal, the recommended target executing unit executes an application for editing a captured image.

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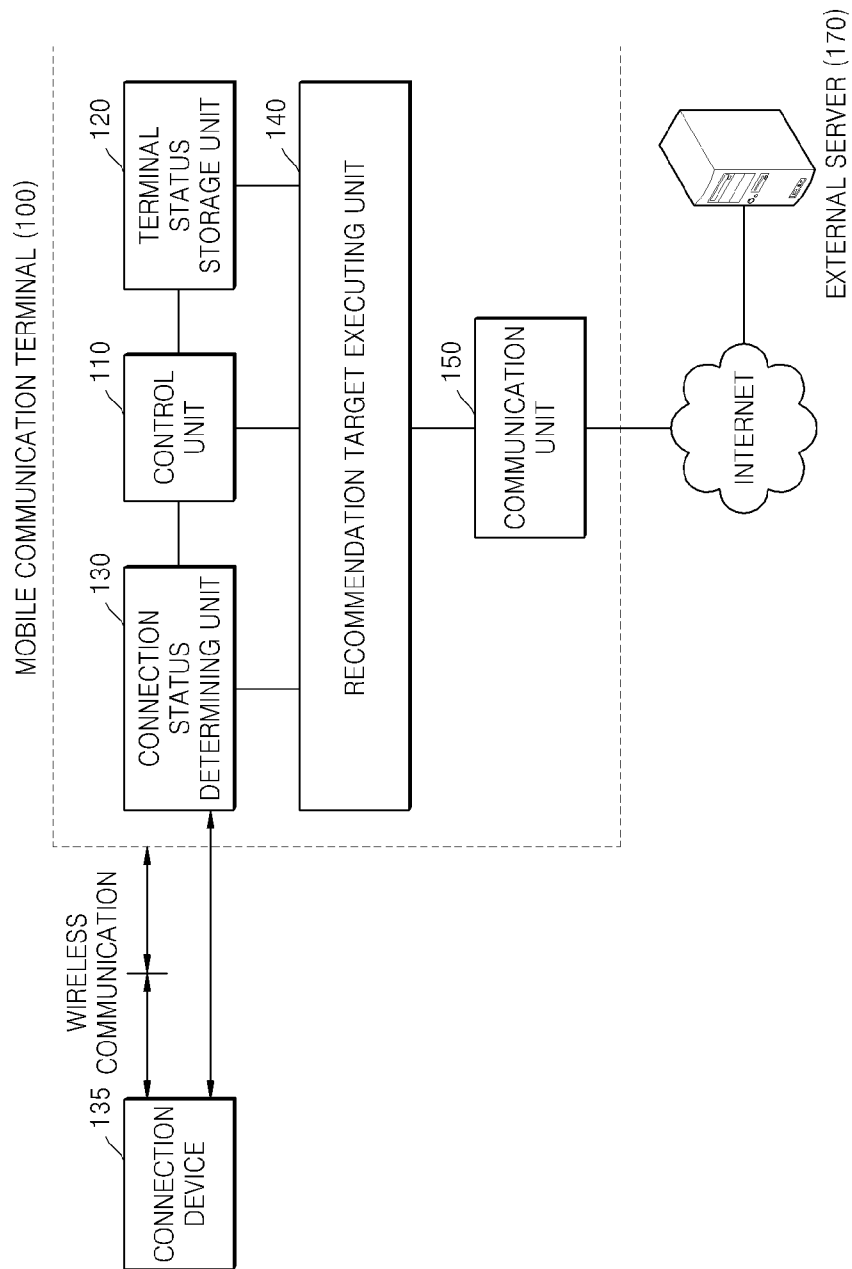
- [Claim 11] The mobile communication terminal of claim 9, wherein, when a mode of the mobile communication terminal is in a keypad input mode, if the pen used as the input device is disconnected from the mobile communication terminal, the recommended target executing unit changes the keypad input mode to a cursive input mode by using the pen and executes an application for writing in cursive.
- [Claim 12] The mobile communication terminal of claim 9, wherein, when a mode of the mobile communication terminal is a sleep mode, if the pen used as the input device is disconnected from the mobile communication terminal, the recommended target executing unit terminates the sleep mode and determines and executes the recommended application.
- [Claim 13] A method of recommending an application in a mobile communication terminal, the method comprising:
 obtaining information regarding a terminal status of the mobile communication terminal;
 accumulating and storing the information regarding the terminal status of the mobile communication terminal;
 determining a connection status of a connection device and the mobile communication terminal;
 determining a list of at least one available application based on the connection status; and
 determining and executing a recommended application from among the list of the at least one available application based on the accumulated and stored information regarding the terminal status of the mobile communication terminal,
 wherein the information regarding the terminal status of the mobile communication terminal comprises at least one of information regarding a movement of the mobile communication terminal and information regarding an environment of a location where the mobile communication terminal is located.
- [Claim 14] A method of recommending content in a mobile communication terminal, the method comprising:
 obtaining information regarding a terminal status of the mobile communication terminal;

accumulating and storing the information regarding the terminal status of the mobile communication terminal;
determining a connection status of a connection device and the mobile communication terminal;
determining a list of at least one available application based on the connection status;
determining a recommended application from among the list of the at least one available application based on the accumulated and stored information regarding the terminal status of the mobile communication terminal;
determining recommended content based on the connection status and the accumulated and stored information regarding the terminal status of the mobile communication terminal; and
executing the recommended application and executing the determined recommended content using the executed application,
wherein the information regarding the terminal status of the mobile communication terminal comprises at least one of information regarding a movement of the mobile communication terminal and information regarding an environment of a location where the mobile communication terminal is located.

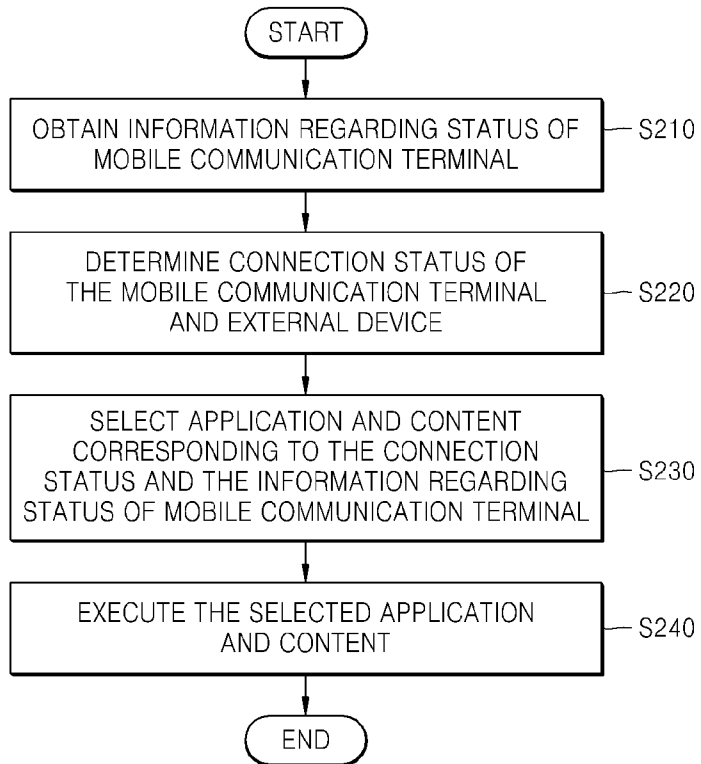
[Claim 15]

A computer readable recording medium having recorded thereon a computer program for executing the method according to claim 13 or 14.

[Fig. 1]

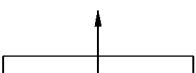


[Fig. 2]

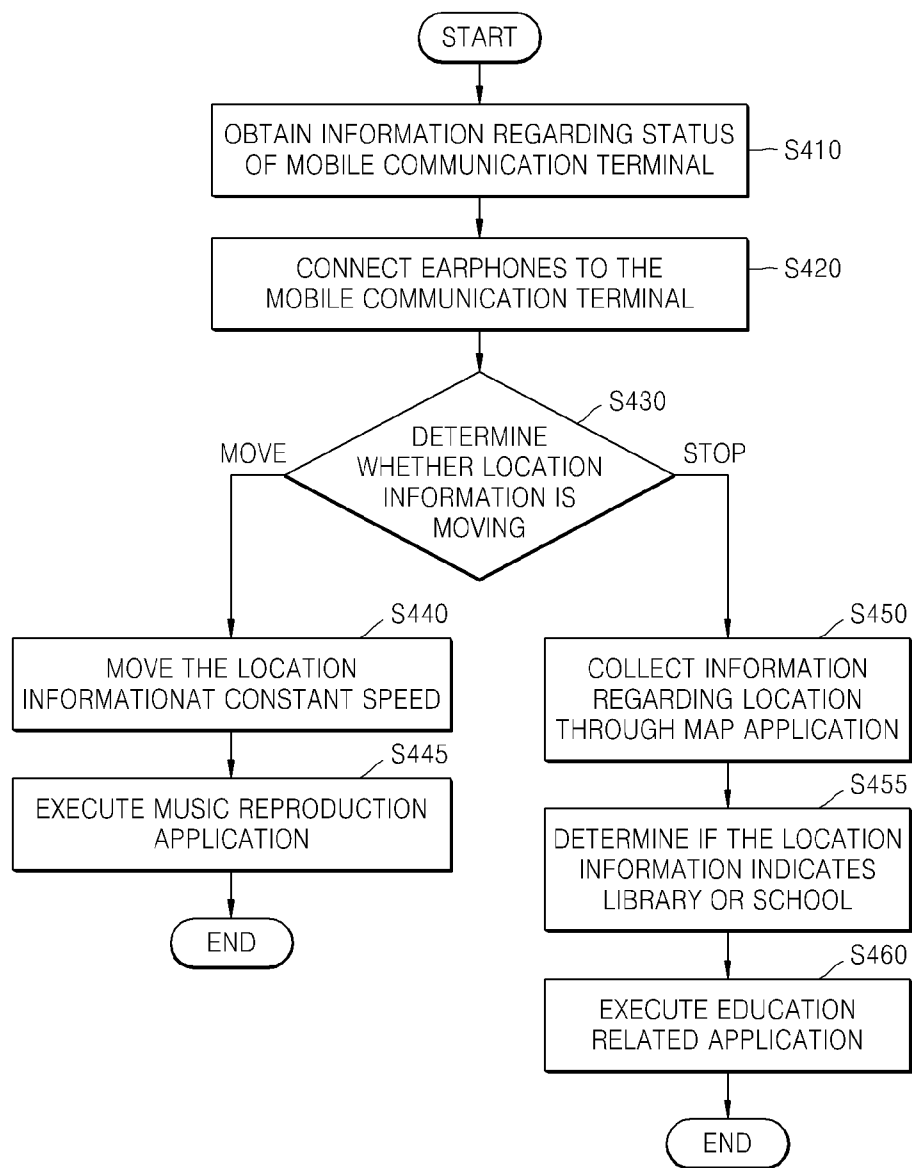


[Fig. 3]

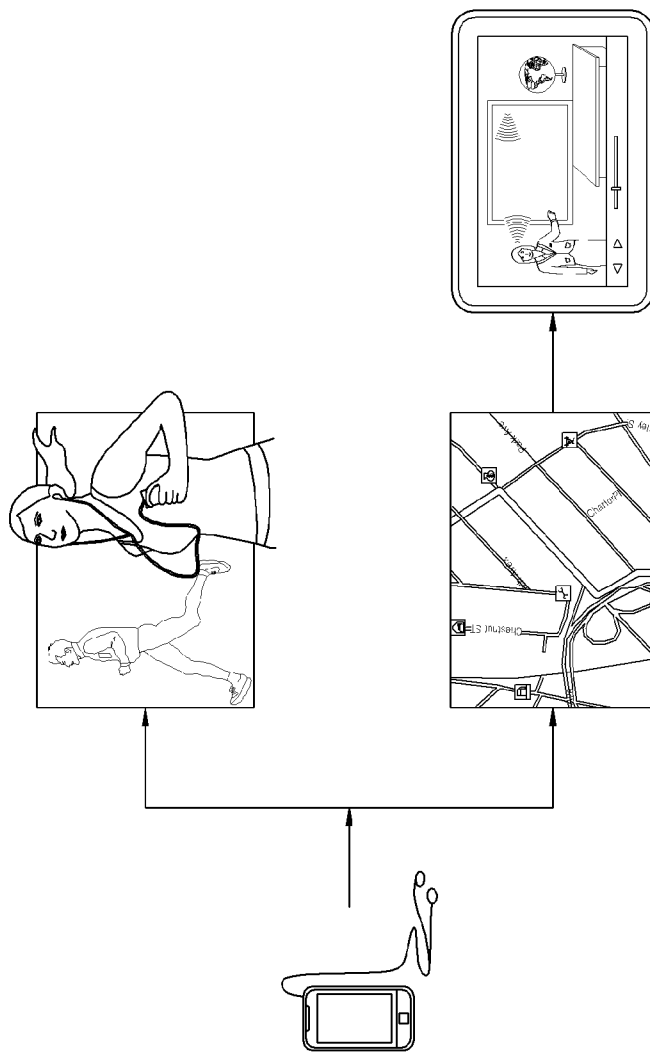
TERMINAL STATUS TIME	LOCATION	RECOGNITION OF MOTION	IMAGE INFORMATION	SOUND INFORMATION	TEMPERATURE	...	EXECUTED APPLICATION	EXECUTED CONTENT
1	(xx, xx)	XYZ			25°C	...	A	
2	(12, 34)	AC		AB	18°C			X
3	(xx, xx)	XYZ			25°C		A	
4	(45, 67)	AC		CD	30°C		B	
5	(xx, xx)	XYZ			25°C		A	
⋮	⋮	⋮	⋮	⋮	⋮		⋮	⋮



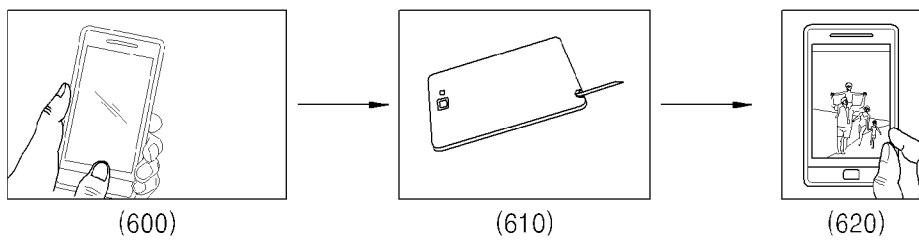
[Fig. 4]



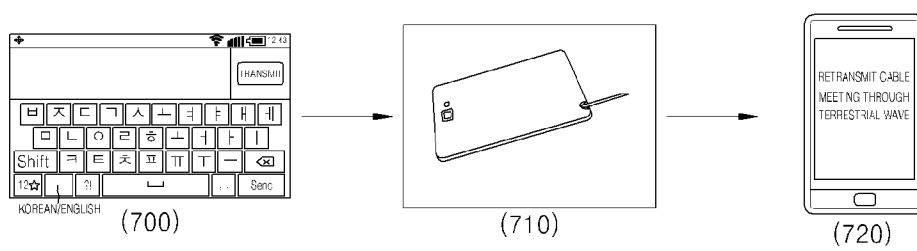
[Fig. 5]



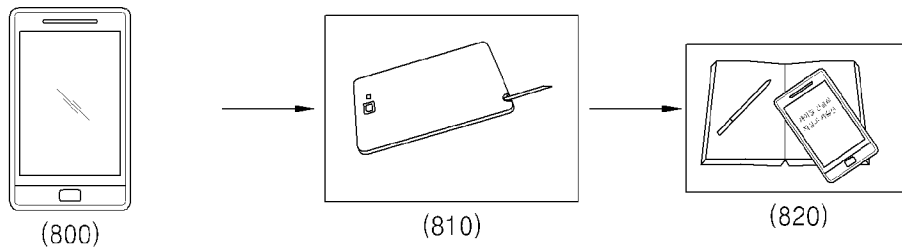
[Fig. 6]



[Fig. 7]



[Fig. 8]



[Fig. 9]

