



US 20050288063A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2005/0288063 A1**

Seo et al.

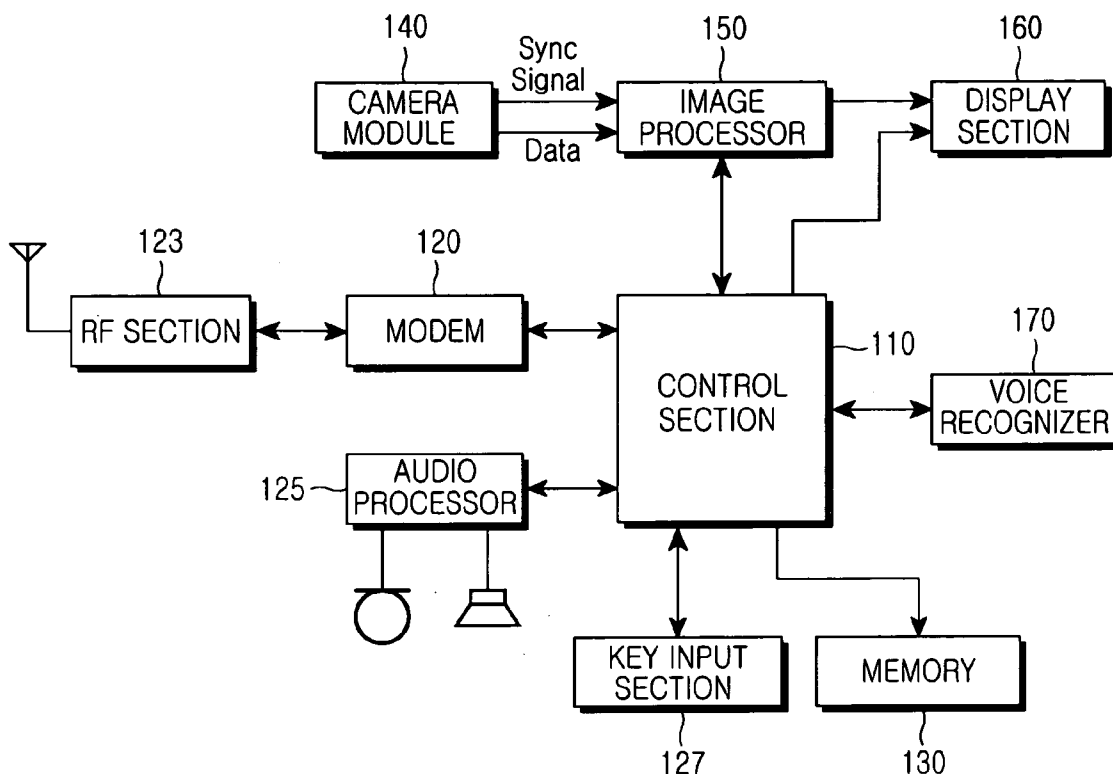
(43) **Pub. Date: Dec. 29, 2005**(54) **METHOD FOR INITIATING VOICE RECOGNITION MODE ON MOBILE TERMINAL**(30) **Foreign Application Priority Data**

Jun. 25, 2004 (KR) 2004-48193

(75) Inventors: **Jeong-Wook Seo**, Buk-gu (KR);
Seung-Nyung Chung, Seoul (KR);
Myung-Hyun Yoo, Seongnam-si (KR);
Joon-Ah Park, Seoul (KR); **Kee-Eung Kim**, Seoul (KR); **Ji-Hye Chung**, Seoul (KR)**Publication Classification**(51) **Int. Cl.⁷** **H04M 1/00**(52) **U.S. Cl.** **455/563**(57) **ABSTRACT**

Disclosed is a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: when a first key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice dialing mode for making a call through voice recognition; when a second key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice menu search mode for searching for a menu through voice recognition; and when a third key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

Correspondence Address:

**ROYLANCE, ABRAMS, BERDO &
GOODMAN, L.L.P.
1300 19TH STREET, N.W.
SUITE 600
WASHINGTON,, DC 20036 (US)**(73) Assignee: **Samsung Electronics Co., Ltd.**(21) Appl. No.: **11/166,213**(22) Filed: **Jun. 27, 2005**

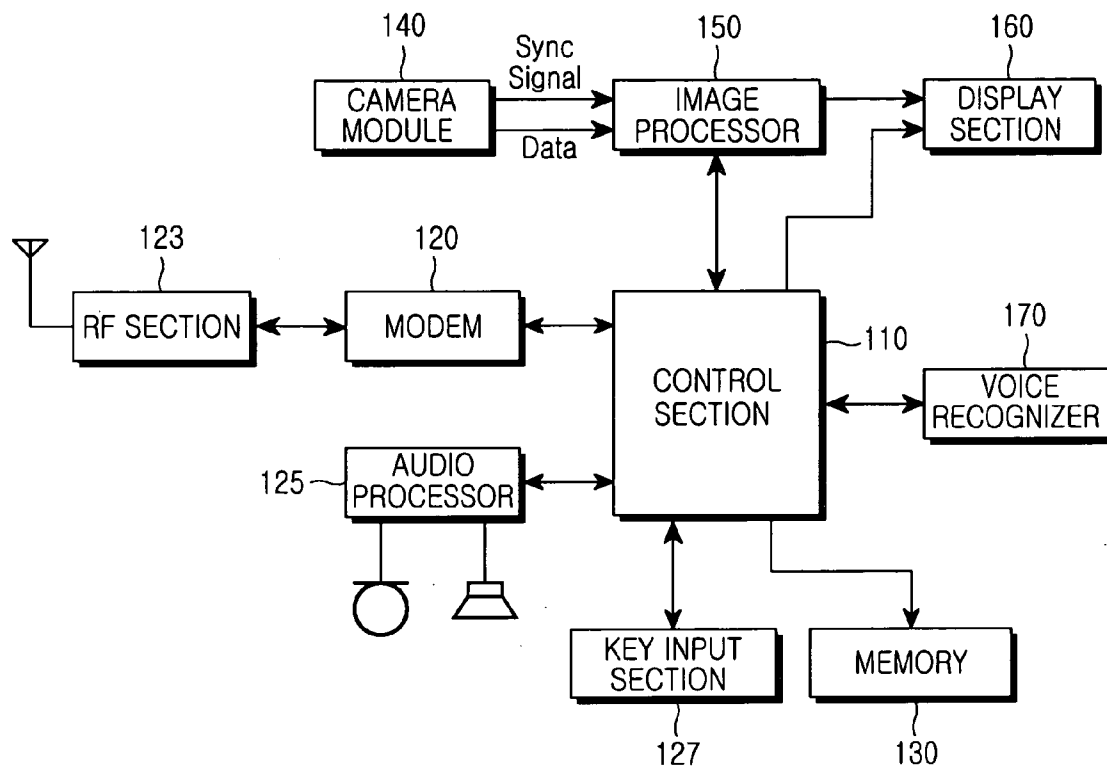


FIG.1

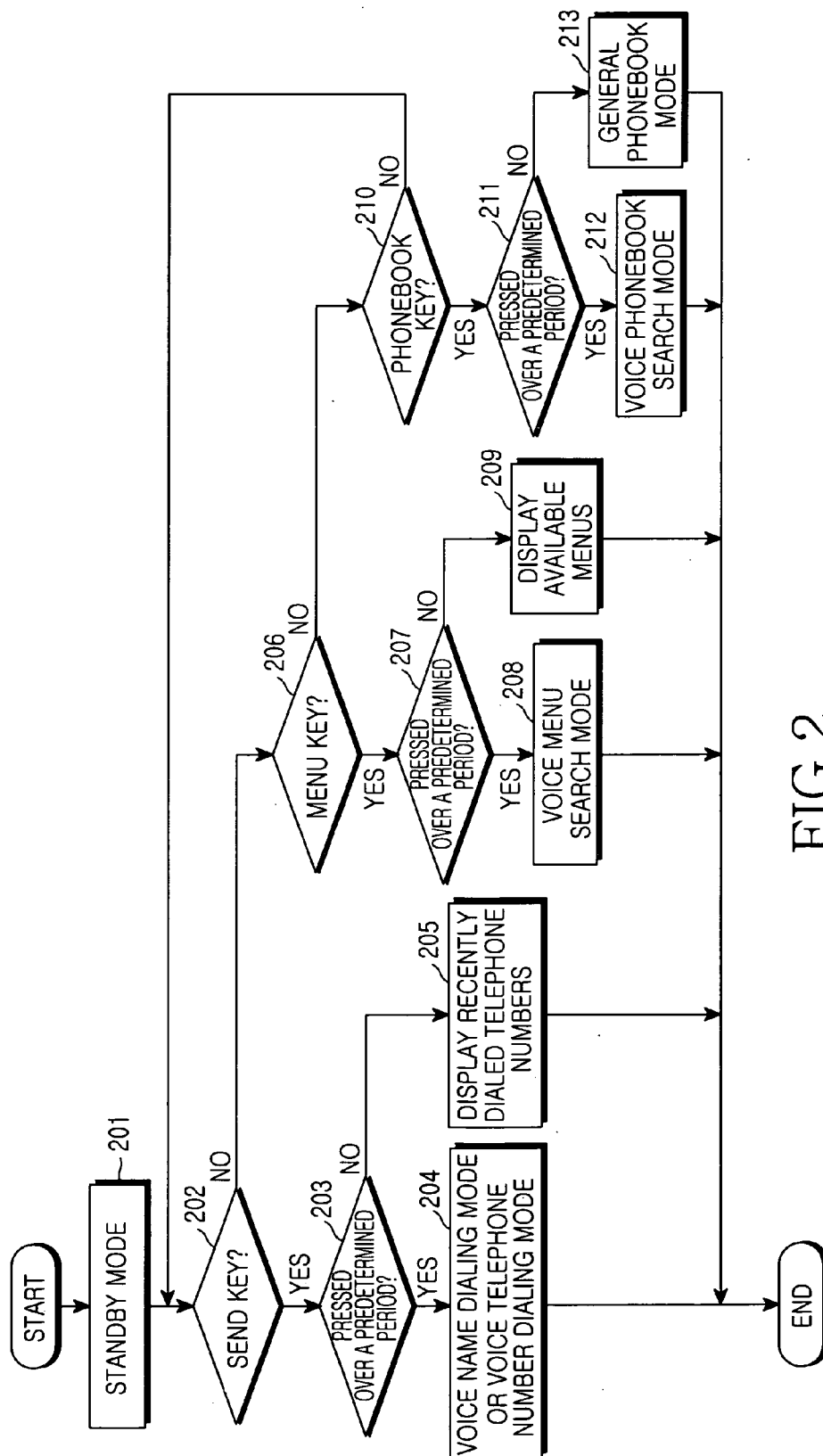


FIG.2

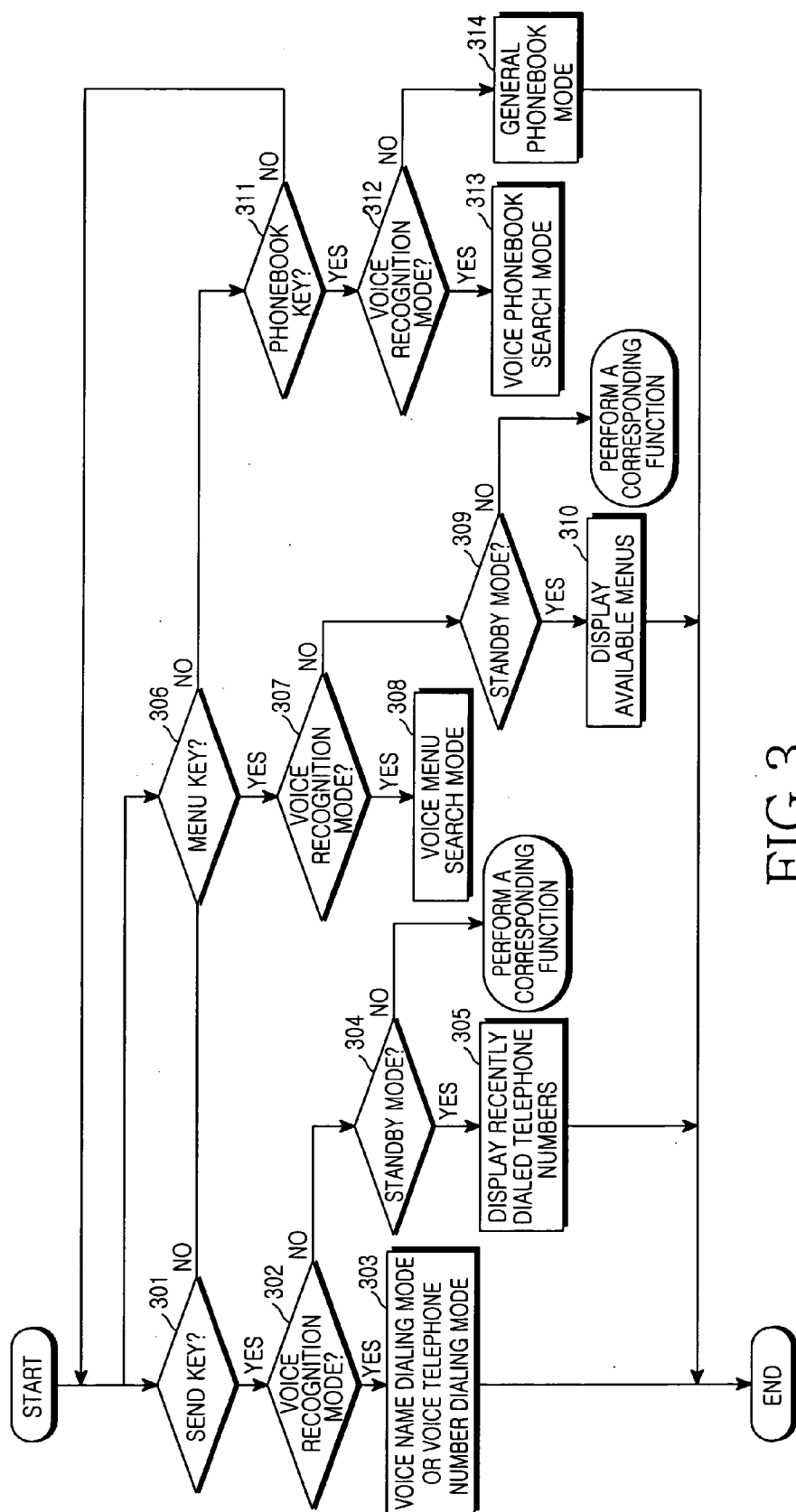


FIG.3

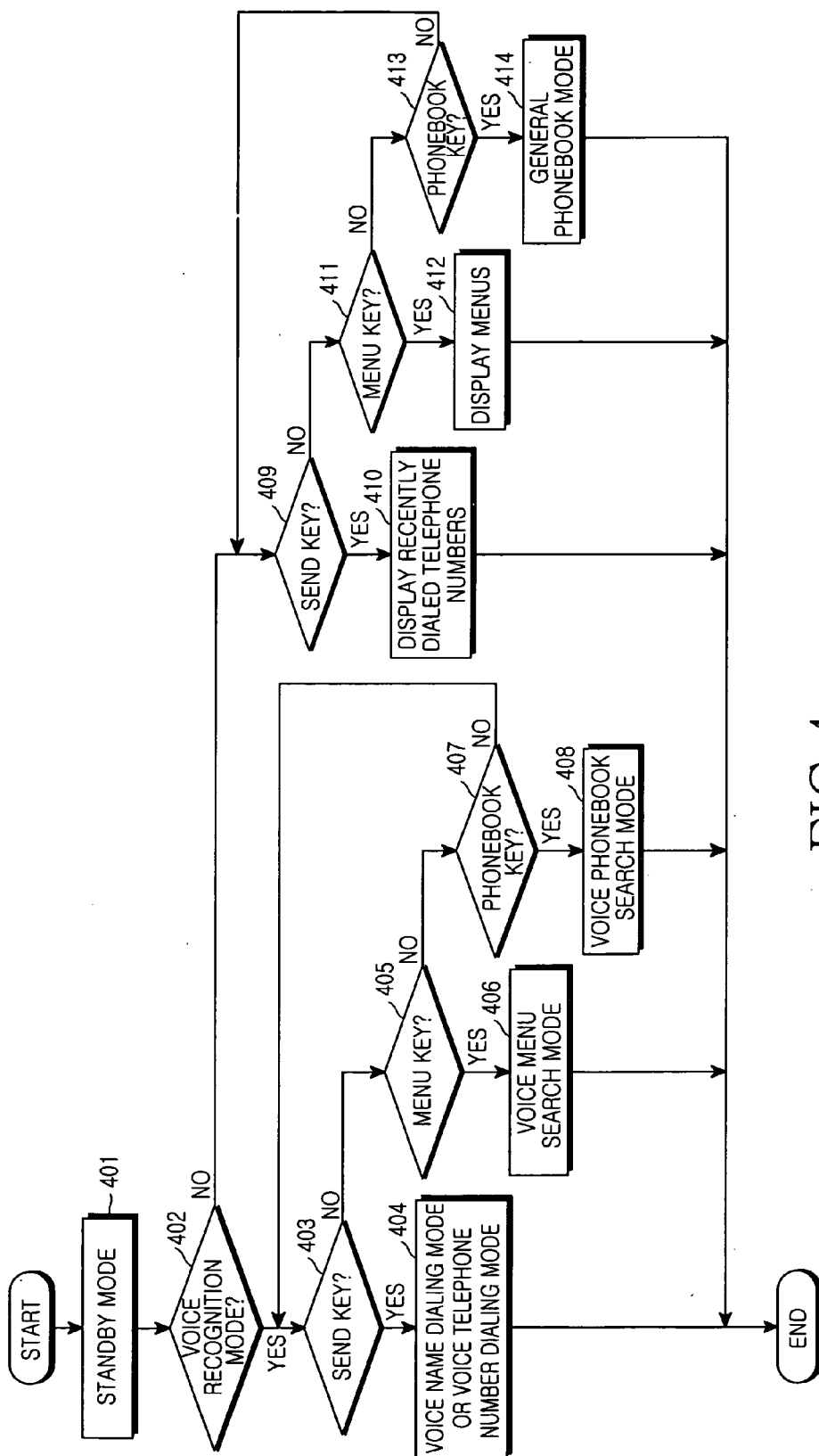
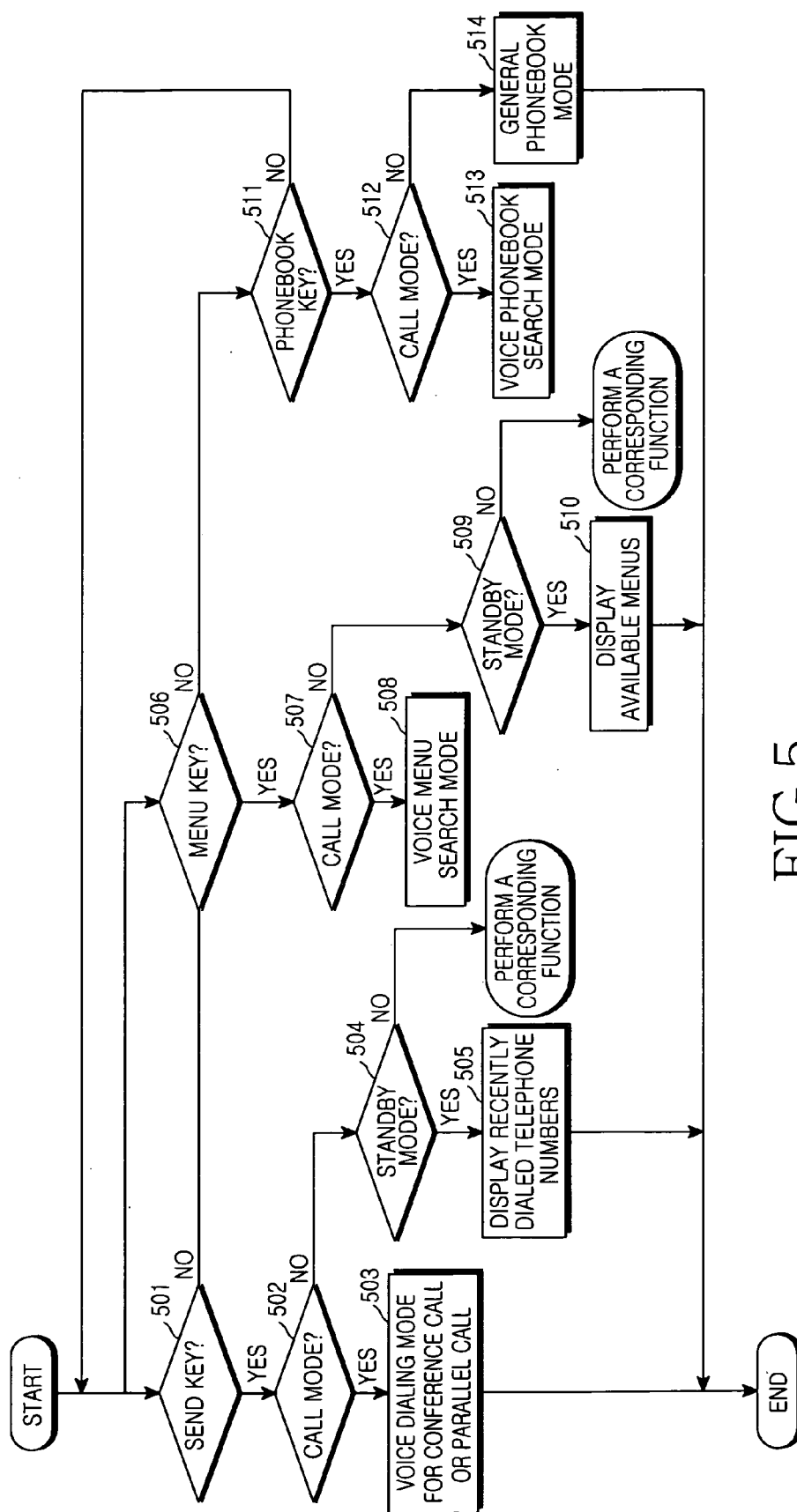


FIG. 4



METHOD FOR INITIATING VOICE RECOGNITION MODE ON MOBILE TERMINAL

PRIORITY

[0001] This application claims priority to an application entitled "Method for Initiating Voice Recognition Mode on Mobile Terminal" filed with the Korean Intellectual Property Office on Jun. 25, 2004 and assigned Serial No. 2004-48193, the contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a method for initiating a voice recognition mode on a mobile terminal, and more particularly to a method for initiating a mode for performing a function through voice recognition according to a key input on a mobile terminal.

[0004] 2. Description of the Related Art

[0005] Voice recognition is a technology for recognizing or understanding human voice via computer analysis. Since the human voice has peculiar frequencies depending on the shape of the mouth and tongue position which change according to pronunciation, it can be recognized by converting speech into an electrical signal and extracting a frequency characteristic of a speech signal. Voice recognition technology is now used in a wide range of applications such as toys, language learning or consumer electronic devices and home appliances. Dialing on a mobile terminal by voice recognition can eliminate the need to directly input a telephone number by key-pressings and can thereby enhance user friendliness.

SUMMARY OF THE INVENTION

[0006] Accordingly, the present invention has been made to solve the problems occurring in the prior art, and an object of the present invention is to provide a method for initiating a mode for performing a function through voice recognition according to a key input on a mobile terminal.

[0007] In accordance with a first aspect of the present invention for accomplishing the above object, there is provided a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: measuring the length of time during which a key provided on the mobile terminal is pressed; when the key is pressed over a predetermined period of time, shifting to a voice recognition mode; and when the key is pressed for a period shorter than the predetermined period, performing a function corresponding to the key.

[0008] In accordance with a second aspect of the present invention, there is provided a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: when a first key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice dialing mode for making a call through voice recognition; when a second key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice menu search mode for searching for a menu through voice recognition; and when a third key provided on the mobile terminal

is pressed over a predetermined period of time, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

[0009] In accordance with a third aspect of the present invention, there is provided a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: when a send key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice name dialing mode or a voice telephone number dialing mode for making a call through voice recognition; when the send key is pressed for a period shorter than the predetermined period, performing a function corresponding to the send key; when a menu key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice menu search mode for searching for a menu through voice recognition; when the menu key is pressed for a period shorter than the predetermined period, performing a function corresponding to the menu key; when a phonebook key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition; and when the phonebook key is pressed for a period shorter than the predetermined period, performing a function corresponding to the phonebook key.

[0010] In accordance with a fourth aspect of the present invention, there is provided a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: when a first key provided on the mobile terminal is pressed in a voice recognition mode, shifting to a voice dialing mode for making a call through voice recognition; when a second key provided on the mobile terminal is pressed in the voice recognition mode, shifting to a voice menu search mode for searching for a menu through voice recognition; and when a third key provided on the mobile terminal is pressed in the voice recognition mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

[0011] In accordance with a fifth aspect of the present invention, there is provided a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: when a send key provided on the mobile terminal is pressed in a voice recognition mode, shifting to a voice name dialing mode or a voice telephone number dialing mode for making a call through voice recognition; when the send key is pressed in a mode other than the voice recognition mode, performing a function corresponding to the send key; when a menu key provided on the mobile terminal is pressed in the voice recognition mode, shifting to a voice menu search mode for searching for a menu through voice recognition; when the menu key is pressed in a mode other than the voice recognition mode, performing a function corresponding to the menu key; when a phonebook key provided on the mobile terminal is pressed in the voice recognition mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition; and when the phonebook key is

pressed in a mode other than the voice recognition mode, performing a function corresponding to the phonebook key.

[0012] In accordance with a sixth aspect of the present invention, there is provided a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: when a voice recognition key is selected, activating a voice recognition key mode; when a first key provided on the mobile terminal is pressed in the voice recognition key mode, shifting to a voice dialing mode for making a call through voice recognition; when a second key provided on the mobile terminal is pressed in the voice recognition key mode, shifting to a voice menu search mode for searching for a menu through voice recognition; and when a third key provided on the mobile terminal is pressed in the voice recognition key mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

[0013] In accordance with a seventh aspect of the present invention, there is provided a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: when a send key provided on the mobile terminal is pressed, performing a function corresponding to the send key; when the send key is pressed after a change of mode to a voice recognition key mode, shifting to a voice name dialing mode or a voice telephone number dialing mode for making a call through voice recognition; when a menu key provided on the mobile terminal is pressed, performing a function corresponding to the menu key; when the menu key is pressed after a change of mode to the voice recognition key mode, shifting to a voice menu search mode for searching for a menu through voice recognition; when a phonebook key provided on the mobile terminal is pressed, performing a function corresponding to the phonebook key; and when the phonebook key is pressed after a change of mode to the voice recognition key mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

[0014] In accordance with an eighth aspect of the present invention, there is provided a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: when a first key provided on the mobile terminal is pressed in a call mode, shifting to a voice dialing mode for making a conference call or a parallel call through voice recognition; when a second key provided on the mobile terminal is pressed in the call mode, shifting to a voice menu search mode for searching for a menu through voice recognition; and when a third key provided on the mobile terminal is pressed in the call mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

[0015] In accordance with a ninth aspect of the present invention, there is provided a method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of: when a send key provided on the mobile terminal is pressed in a call mode, shifting to a voice name dialing mode or a voice telephone number dialing mode for making a conference call or a parallel call through voice recognition; when the send

key is pressed in a mode other than the call mode, performing a function corresponding to the send key; when a menu key provided on the mobile terminal is pressed in the call mode, shifting to a voice menu search mode for searching for a menu through voice recognition; when the menu key is pressed in a mode other than the call mode, performing a function corresponding to the menu key; when a phonebook key provided on the mobile terminal is pressed in the call mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition; and when the phonebook key is pressed in a mode other than the call mode, performing a function corresponding to the phonebook key.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The above and other objects, features and advantages of the present invention will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0017] **FIG. 1** is a block diagram of a mobile terminal according to the present invention;

[0018] **FIG. 2** is a flow chart showing a process of activating a voice recognition mode on a mobile terminal according to a first embodiment of the present invention;

[0019] **FIG. 3** is a flow chart showing a process of activating a voice recognition mode on a mobile terminal according to a second embodiment of the present invention;

[0020] **FIG. 4** is a flow chart showing a process of activating a voice recognition mode on a mobile terminal according to a third embodiment of the present invention; and

[0021] **FIG. 5** is a flow chart showing a process of activating a voice recognition mode on a mobile terminal according to a fourth embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0022] Hereinafter, preferred embodiments of the present invention will be described with reference to the accompanying drawings. In the drawings, the same element, although depicted in different drawings, will be designated by the same reference numeral or character. Also, in the following description of the present invention, a detailed description of known functions and configurations incorporated herein will be omitted when it may make the subject matter of the present invention rather unclear.

[0023] **FIG. 1** shows the construction of a mobile terminal according to the present invention.

[0024] Referring to **FIG. 1**, an RF section **123** performs a wireless communication function of the mobile terminal. The RF section **123** comprises a RF transmitter for performing upward conversion and amplification of the frequency of a transmitted signal and an RF receiver for amplifying a received signal with low noise and performing a downward conversion of the frequency of the signal.

[0025] A modem **120** comprises a transmitter for coding and modulating a transmitted signal and a receiver for demodulating and decoding a received signal. An audio

processor **125** may compose a codec which comprises a data codec for processing packet data and an audio codec for processing an audio signal such as a speech signal. The audio processor **125** converts a digital audio signal outputted from the modem **120** into an analog signal through the audio codec and reproduces the analog signal. Also, the audio processor **125** converts an analog audio signal generated from a microphone into a digital audio signal and transmits the digital audio signal to the modem **120**. The codec can be provided as an independent element or included in a control section **110**.

[0026] A memory **130** may be composed of a program memory and a data memory. The program memory includes programs for controlling general operations of the mobile terminal and those for performing a function corresponding to a key input through voice recognition according to the present invention. The data memory temporarily stores data generated during implementation of the above programs.

[0027] The control section **110** controls the overall operations of the mobile terminal. The control section **110** may include the modem **120** and the codec. In the preferred embodiments of the present invention, the control section **110** controls implementation of a function or shift into a mode for voice recognition according to the length of time during which a specific key is pressed. When a specific function key is pressed, the control section **110** controls implementation of a corresponding function or shift into a mode for performing the function through voice recognition according to the current mode of the mobile terminal. If a voice recognition key has been pressed before any other key input, the control section **110** activates a mode for performing a function corresponding to the other key through voice recognition.

[0028] A camera module **140** is used to take pictures of an object on which its lens focuses. The camera module **140** comprises a camera sensor for converting a photographed optical signal into an electric signal and a signal processor for converting an analog image signal photographed by the camera sensor into digital data. Supposing that the camera sensor is a CCD (charge coupled device) sensor, the signal processor can be a DSP (digital signal processor). The camera sensor and the signal processor can be either integrated into a single element or separated as independent elements.

[0029] An image processor **150** generates picture data for displaying an image signal outputted from the camera module **140**. The image processor **150** processes image signals outputted from the camera module **140** in frames. Also, the image processing section **150** adjusts the frame image data to conform to the size and other features of a display section **160** and outputs the adjusted frame image data. The image processor **150** comprising an image codec compresses the frame image data displayed on the display section **160** in a preset manner or restore the compressed frame image data to the original frame image data. The image codec is selected from a variety of still or moving picture codecs, such as JPEG codec, MPEG4 codec or Wavelet codec. Supposing that the image processor **150** has an OSD (on screen display) function, it can output OSD data according to the displayed picture size under the control of the control section **110**.

[0030] The display section **160** displays image data outputted from the image processor **150** or user data outputted

from the control section **110**. When using an LCD, the display section **160** may comprise an LCD controller, a memory for storing image data and an LCD device. When the LCD is a touch screen, it can serve as an input section. The display section **160** can display a voice dialing section consisting of first to third input sections in a voice dialing mode according to the present invention.

[0031] A key input section **127** is provided with keys for inputting numbers and characters and function keys for setting up various functions. The key input section **127** may also include keys for performing predetermined functions or initiating modes for voice recognition according to the present invention. The key input section **127** may include first to third keys for performing predetermined functions or initiating modes for voice recognition according to the present invention. The first key can be used to perform a predetermined function or to enter a voice name dialing mode or a voice telephone number dialing mode. The second key can be used to perform a predetermined function or to enter a voice menu search mode. The third key can be used to perform a predetermined function or to enter a voice phonebook search mode.

[0032] A voice recognizer **170** detects the start and end points of a sound made by the user and inputted through a microphone. Upon extracting characteristic data in a speech section excluding mutes preceding and following the speech, the voice recognizer **170** performs vector quantization on the data in realtime. The voice recognizer **170** detects a word most similar to the characteristic data from the words recorded in a database. The voice recognizer **170** converts the detected word into a character signal which is then displayed on the voice dialing section of the display section **160**.

[0033] The process of activating a mode for performing a function through voice recognition on a mobile terminal having the above structure will be explained in detail with reference to FIGS. 2 to 5.

[0034] FIG. 2 is a flow chart showing a process of activating a mode for performing a function through voice recognition on a mobile terminal according to the first embodiment of the present invention. In the first embodiment, it is supposed that the first, second and third keys provided on the key input section **127** are a send key, a menu key and a phonebook key, respectively.

[0035] The process according to the first embodiment will be explained in more detail with reference to FIG. 1.

[0036] When a user presses the send key in a standby mode of step **201**, the control section **110** detects the key input at step **202** and measures the length of time during which the send key is pressed. When the control section **110** detects that the send key is pressed over a predetermined period of time at step **203**, it proceeds with step **204** to enter a voice dialing mode for making a call through voice recognition. At step **204**, the control section **110** also determines the type of voice dialing mode. If a voice name dialing mode has been set to be activated when the send key is pressed over the predetermined period of time, the control section **110** will activate the voice name dialing mode in which the user can say a recipient's name to initiate an outgoing call to a stored telephone number of the recipient through voice recognition. If a voice telephone number

dialing mode has been set to be activated when the send key is pressed over the predetermined period of time, the control section 110 will activate the voice telephone number dialing mode in which the user can say a telephone number of a recipient to initiate an outgoing call to the telephone number through voice recognition. When the control section 110 detects that the send key is pressed for a period shorter than the predetermined period of time at step 203, it proceeds with step 205 to control the display section 160 to display a list of recently dialed telephone numbers. When the user selects one of the telephone numbers displayed on the display section 160, the control section 110 performs a function of initiating an outgoing call to the selected telephone number.

[0037] When the user presses the menu key in the standby mode of step 201, the control section 110 detects the key input at step 206 and measures the length of time during which the menu key is pressed. When the control section 110 detects that the menu key is pressed over a predetermined period of time at step 207, it proceeds with step 208 to enter a voice menu search mode for searching for a menu through voice recognition. When the control section 110 detects that the menu key is pressed for a period shorter than the predetermined period of time at step 201, it proceeds with step 209 to control the display section 160 to display all available menus of the mobile terminal.

[0038] When the user presses the phonebook key in the standby mode of step 201, the control section 110 detects the key input at step 210 and measures the length of time during which the phonebook key is pressed. When the control section 110 detects that the phonebook key is pressed over a predetermined period of time at step 211, it proceeds with step 212 to activate a voice phonebook search mode for searching for a name and a corresponding telephone number through voice recognition. When the control section 110 detects that the menu key is pressed for a period shorter than the predetermined period of time at step 211, it proceeds with step 213 to activate a general phonebook search in which the user can search for a name or a telephone number in a phonebook stored in the mobile terminal.

[0039] FIG. 3 is a flow chart showing a process of activating a mode for performing a function through voice recognition on a mobile terminal according to the second embodiment of the present invention. In the second embodiment, it is supposed that the first, second and third keys provided on the key input section 127 are a send key, a menu key and a phonebook key, respectively.

[0040] The process according to the second embodiment will be explained in more detail with reference to FIG. 1.

[0041] When the user presses the send key, the control section 110 detects the key input at step 301 and determines the current mode of the mobile terminal. When the mobile terminal is currently in a voice recognition mode, the control section 110 detects the mode at step 302 and proceeds with step 303 to enter a voice dialing mode for making a call through voice recognition. At step 303, the control section 110 also determines the type of voice dialing mode. If a voice name dialing mode has been set to be activated when the send key is pressed in the voice recognition mode, the control section 110 will activate the voice name dialing mode in which the user can say a recipient's name to initiate an outgoing call to a stored telephone number of the recipient

ent through voice recognition. If a voice telephone number dialing mode has been set to be activated when the send key is pressed over the predetermined period of time, the control section 110 will activate the voice telephone number dialing mode in which the user can say a telephone number of a recipient to initiate an outgoing call to the telephone number through voice recognition. When the mobile terminal is currently in the standby mode, the control section 110 detects the mode at step 304 and proceeds with step 305 to control the display section 160 to display a list of recently dialed telephone numbers. When the user selects one of the telephone numbers displayed on the display section 160, the control section 110 performs a function to initiate an outgoing call to the selected telephone number.

[0042] When the user presses the menu key, the control section 110 detects the key input at step 306 and determines the current mode of the mobile terminal. When the mobile terminal is currently in the voice recognition mode, the control section detects the mode at step 307 and proceeds with step 308 to enter a voice menu search mode for searching for a menu through voice recognition. When the mobile terminal is currently in the standby mode, the control section 110 detects the mode at step 309 and proceeds with step 310 to control the display section 160 to display all available menus of the mobile terminal.

[0043] When the user presses the phonebook key, the control section 110 detects the key input at step 311 and determines the current mode of the mobile terminal. When the mobile terminal is currently in the voice recognition mode, the control section detects the mode at step 312 and proceeds with step 313 to activate a voice phonebook search mode for searching for a name and a corresponding telephone number through voice recognition. When the mobile terminal is currently in the standby mode, the control section 110 detects the mode at step 312 and proceeds with step 314 to activate a general phonebook search in which the user can search for a name or a telephone number in a phonebook stored in the mobile terminal.

[0044] FIG. 4 is a flow chart showing a process of activating a mode for performing a function through voice recognition on a mobile terminal according to the third embodiment of the present invention. In the third embodiment, it is supposed that the first, second and third keys provided on the key input section 127 are a send key, a menu key and a phonebook key, respectively.

[0045] The process according to the third embodiment will be explained in more detail with reference to FIG. 1.

[0046] When the user presses a voice recognition key in the standby mode of step 401, the control section 110 detects the key input at step 402 and controls a subsequently pressed key to activate a mode for performing a function through voice recognition. A key capable of performing a predetermined function and activating a mode for voice recognition can only activate the mode for voice recognition, if pressed subsequently to the voice recognition key. When the user presses the send key following the voice recognition key, the control section 110 detects the key input at step 403 and proceed with step 404 to enter a voice dialing mode for making a call through voice recognition. At step 404, the control section 110 also determines the type of voice dialing mode. If a voice name dialing mode has been set to be activated when the send key is pressed in the voice recog-

dition mode, the control section 110 will activate the voice name dialing mode in which the user can say a recipient's name to initiate an outgoing call to a stored telephone number of the recipient through voice recognition. If a voice telephone number dialing mode has been set to be activated when the send key is pressed over the predetermined period of time, the control section 110 will activate the voice telephone number dialing mode in which the user can say a telephone number of a recipient to initiate an outgoing call to the telephone number through voice recognition.

[0047] When the user presses the menu key following the voice recognition key, the control section 110 detects the key input at step 405 and proceeds with step 406 to enter a voice menu search mode for searching for a menu through voice recognition.

[0048] When the user presses the phonebook key following the voice recognition key, the control section 110 detects the key input at step 407 and proceeds with step 408 to activate a voice phonebook search mode for searching for a name and a corresponding telephone number through voice recognition.

[0049] On the other hand, when the user presses the send key in the standby mode of step 401, the control section 110 detects the key input at step 409 and proceeds with step 410 to control the display section 160 to display a list of recently dialed telephone numbers. When the user selects one of the telephone numbers displayed on the display section 160, the control section 110 performs a function of initiating an outgoing call to the selected telephone number. When the user presses the menu key in the standby mode of step 401, the control section 110 detects the key input at step 411 and proceeds with step 412 to control the display section 160 to display all available menus of the mobile terminal. When the user presses the phonebook key in the standby mode of step 401, the control section 110 detects the key input at step 413 and proceeds with step 414 to activate a general phonebook search in which the user can search for a name or a telephone number in a phonebook stored in the mobile terminal.

[0050] FIG. 5 is a flow chart showing a process of activating a mode for performing a function through voice recognition on a mobile terminal according to the fourth embodiment of the present invention. In the fourth embodiment, it is supposed that the first, second and third keys provided on the key input section 127 are a send key, a menu key and a phonebook key, respectively.

[0051] The process according to the fourth embodiment will be explained in more detail with reference to FIG. 1.

[0052] When the user presses the send key, the control section 110 detects the key input at step 501 and determines the current mode of the mobile terminal. When the mobile terminal is currently in a call mode, the control section 110 detects the mode at step 502 and proceeds with step 503 to enter a voice dialing mode for making a conference call or a parallel call through voice recognition. When the mobile terminal is in the standby mode, the control section 110 detects the mode at step 504 and proceeds with step 505 to control the display section 160 to display a list of recently dialed telephone numbers. When the user selects one of the telephone numbers displayed on the display section 160, the control section 110 performs a function of initiating an outgoing call to the selected telephone number.

[0053] When the user presses the menu key, the control section 110 detects the key input at step 506 and determines the current mode of the mobile terminal. When the mobile terminal is currently in the call mode, the control section detects the mode at step 507 and proceeds with step 508 to enter a voice menu search mode for searching for a menu through voice recognition. When the mobile terminal is currently in the standby mode, the control section 110 detects the mode at step 509 and proceeds with step 510 to control the display section 160 to display all available menus of the mobile terminal.

[0054] When the user presses the phonebook key, the control section 110 detects the key input at step 511 and determines the current mode of the mobile terminal. When the mobile terminal is currently in the call mode, the control section detects the mode at step 512 and proceeds with step 513 to activate a voice phonebook search mode for searching for a name and a corresponding telephone number through voice recognition. When the mobile terminal is currently in the standby mode, the control section 110 detects the mode at step 512 and proceeds with step 514 to activate a general phonebook search in which the user can search for a name or a telephone number in the phonebook stored in the mobile terminal.

[0055] The send key, menu key and phonebook key have been explained as examples of function keys that can perform predetermined functions and activate modes for voice recognition. However, function keys and modes for voice recognition are not limited to those explained above. Users can selectively use other keys provided on the mobile terminal to activate corresponding modes for voice recognition.

[0056] According to the present invention, a function key can be used to perform a predetermined function or activate a mode for performing the function through voice recognition according to the length of time during which the key is pressed, the current mode of the mobile terminal or the preceding key input.

[0057] Although preferred embodiments of the present invention have been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims, including the full scope of equivalents thereof.

What is claimed is:

1. A method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of:

measuring the length of time during which a key provided on the mobile terminal is pressed;

when the key is pressed over a predetermined period of time, shifting to a voice recognition mode; and

when the key is pressed for a period shorter than the predetermined period, performing a function corresponding to the key.

2. A method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of:

when a first key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice dialing mode for making a call through voice recognition;

when a second key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice menu search mode for searching for a menu through voice recognition; and

when a third key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

3. The method as claimed in claim 2, further comprising the steps of:

when the first key is pressed for a period shorter than the predetermined period of time, performing a function corresponding to the first key;

when the second key is pressed for a period shorter than the predetermined period of time, performing a function corresponding to the second key; and

when the third key is pressed for a period shorter than the predetermined period of time, performing a function corresponding to the third key.

4. A method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of:

when a send key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice name dialing mode or a voice telephone number dialing mode for making a call through voice recognition;

when the send key is pressed for a period shorter than the predetermined period, performing a function corresponding to the send key;

when a menu key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice menu search mode for searching for a menu through voice recognition;

when the menu key is pressed for a period shorter than the predetermined period, performing a function corresponding to the menu key;

when a phonebook key provided on the mobile terminal is pressed over a predetermined period of time, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition; and

when the phonebook key is pressed for a period shorter than the predetermined period, performing a function corresponding to the phonebook key.

5. A method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of:

when a first key provided on the mobile terminal is pressed in a voice recognition mode, shifting to a voice dialing mode for making a call through voice recognition;

when a second key provided on the mobile terminal is pressed in the voice recognition mode, shifting to a voice menu search mode for searching for a menu through voice recognition; and

when a third key provided on the mobile terminal is pressed in the voice recognition mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

6. The method as claimed in claim 5, further comprising the steps of:

when the first key is pressed in a mode other than the voice recognition mode, performing a function corresponding to the first key;

when the second key is pressed in a mode other than the voice recognition mode, performing a function corresponding to the second key; and

when the third key is pressed in a mode other than the voice recognition mode, performing a function corresponding to the third key.

7. A method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of:

when a send key provided on the mobile terminal is pressed in a voice recognition mode, shifting to a voice name dialing mode or a voice telephone number dialing mode for making a call through voice recognition;

when the send key is pressed in a mode other than the voice recognition mode, performing a function corresponding to the send key;

when a menu key provided on the mobile terminal is pressed in the voice recognition mode, shifting to a voice menu search mode for searching for a menu through voice recognition;

when the menu key is pressed in a mode other than the voice recognition mode, performing a function corresponding to the menu key;

when a phonebook key provided on the mobile terminal is pressed in the voice recognition mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition; and

when the phonebook key is pressed in a mode other than the voice recognition mode, performing a function corresponding to the phonebook key.

8. A method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of:

when a voice recognition key is selected, activating a voice recognition key mode;

when a first key provided on the mobile terminal is pressed in the voice recognition key mode, shifting to a voice dialing mode for making a call through voice recognition;

when a second key provided on the mobile terminal is pressed in the voice recognition key mode, shifting to a voice menu search mode for searching for a menu through voice recognition; and

when a third key provided on the mobile terminal is pressed in the voice recognition key mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

9. The method as claimed in claim 8, further comprising the steps of:

when the first key is pressed in a general mode of the mobile terminal, performing a function corresponding to the first key;

when the second key is pressed in the general mode, performing a function corresponding to the second key; and

when the third key is pressed in the general mode, performing a function corresponding to the third key.

10. A method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of:

when a send key provided on the mobile terminal is pressed, performing a function corresponding to the send key;

when the send key is pressed after a change of mode to a voice recognition key mode, shifting to a voice name dialing mode or a voice telephone number dialing mode for making a call through voice recognition;

when a menu key provided on the mobile terminal is pressed, performing a function corresponding to the menu key;

when the menu key is pressed after a change of mode to the voice recognition key mode, shifting to a voice menu search mode for searching for a menu through voice recognition;

when a phonebook key provided on the mobile terminal is pressed, performing a function corresponding to the phonebook key; and

when the phonebook key is pressed after a change of mode to the voice recognition key mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

11. A method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of:

when a first key provided on the mobile terminal is pressed in a call mode, shifting to a voice dialing mode for making a conference call or a parallel call through voice recognition;]

when a second key provided on the mobile terminal is pressed in the call mode, shifting to a voice menu search mode for searching for a menu through voice recognition; and

when a third key provided on the mobile terminal is pressed in the call mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition.

12. The method as claimed in claim 11, further comprising the steps of:

when the first key is pressed in a mode other than the call mode, performing a function corresponding to the first key;

when the second key is pressed in a mode other than the call mode, performing a function corresponding to the second key; and

when the third key is pressed in a mode other than the call mode, performing a function corresponding to the third key.

13. A method for initiating a mode for performing a function through voice recognition on a mobile terminal, which comprises the steps of:

when a send key provided on the mobile terminal is pressed in a call mode, shifting to a voice name dialing mode or a voice telephone number dialing mode for making a conference call or a parallel call through voice recognition;

when the send key is pressed in a mode other than the call mode, performing a function corresponding to the send key;

when a menu key provided on the mobile terminal is pressed in the call mode, shifting to a voice menu search mode for searching for a menu through voice recognition;

when the menu key is pressed in a mode other than the call mode, performing a function corresponding to the menu key;

when a phonebook key provided on the mobile terminal is pressed in the call mode, shifting to a voice phonebook search mode for searching for a name and a corresponding telephone number in a phonebook through voice recognition; and

when the phonebook key is pressed in a mode other than the call mode, performing a function corresponding to the phonebook key.

* * * * *