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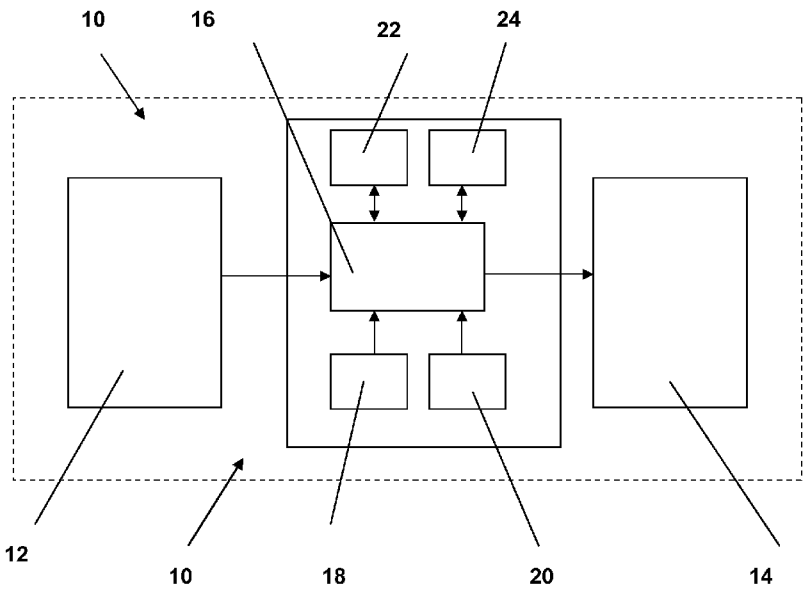
Published:

— *with international search report (Art. 21(3))*

(54) **Title**: AN ELECTRONIC DEVICE PROVIDING DIFFERENT ACCESSES TO DIFFERENT USERS THROUGH SINGLE USER INTERFACE

Fig. 1



(57) **Abstract**: The invention proposes a device and a method to provide different functionalities to different users through a set of icons displayed in the finger touch sensor area. The electronic device10 comprises a finger touch sensor 12, a display 14, a user interface 16, a set of databases 18 of fingerprints and a set of functions 20. The electronic device 10 also comprises a set of applications, for example, a Radio application 22, a Navigation application 24. Here a set of icons are displayed on the display which has the finger touch sensor 12 below it. Depending upon the finger print of the user touching the icon, a function associated to the user is executed. Thus a same icon when used by different users executes a different function.

WO 2013/007573 A1

Description

TITLE

"AN ELECTRONIC DEVICE PROVIDING DIFFERENT ACCESSES TO DIFFERENT USERS THROUGH SINGLE USER INTERFACE"

Field of Invention:

The invention relates to an electronic device which provides different accesses to different users using a single user interface, depending upon the identification of the user.

BACKGROUND OF THE INVENTION:

In today's market, electronic devices are available which identify the users through unique identification and provide them access to the different features of the device.

The US patent RE42038 discloses one such device. The invention discloses a method for authenticating individuals and verifying their security privileges to access sensitive data, based on a finger-touch selection of an icon presented on the display apparatus of the man-machine interface device.

ADVANTAGES OF THE INVENTION:

The invention proposes a device and a method to provide different functionalities to different users using same icons from a single user interface.

By touching a particular icon, different functions are executed for different users. Also the user's authentication is verified before executing the function.

BRIEF DESCRIPTION OF THE DRAWINGS:

Figure 1: Shows the schematic of the electronic device

Figure 2: Shows the schematic of the electronic device running a Radio application

Figure 3: Shows the schematic of the electronic device running a Navigation application

DESCRIPTION OF THE INVENTION:

Shown in figure 1 is a schematic of the electronic device 10 according to the invention. The electronic device comprises a finger touch sensor 12, a display 14, a user interface 16, a set of databases 18 of fingerprints and a set of functions 20. The electronic device 10 also comprises a set of applications, for example, a Radio application 22, a Navigation application 24.

The set of databases 18 of fingerprints is referred as database 18 henceforth in the document. The fingerprints may be replaced by a bio-metric data set corresponding to the users. The user interface 16 may run as a single function or a set of functions. Also the user interface 16 may use state machines to determine what action needs to be taken for any event generated. An event may be in the form of a touch of a finger, expiry of a timer, an external event coming from any external device, error conditions, interrupts etc. Depending upon the current state of the user interface 16 and the event received, the next state of the user interface 16 is decided using the sate machine and accordingly display is updated.

The finger touch sensor 12 is placed on top of the display 14. The finger touch sensor 12 detects touch of a finger and also receives the fingerprints of the finger touching the finger touch sensor 12. The received fingerprint is transmitted to the user interface 16.

There are different technologies available for detection of finger prints. Some of the known technologies are: Optical finger print scanner, capacitive fingerprint sensor, ultrasonic imaging

etc. As these technologies are already known, it is not within the scope of this invention to explain them in detail.

The database 18 contains a set of fingerprints corresponding to a set of users. Each of the fingerprints from the database 18 is associated to a function 20 or a set of functions 20. When a user touches any icon on the finger touch sensor 12, the finger touch sensor 12 checks whether the area touched by the user has an icon displayed on the display 14. If there is an icon at the area touched by the user, then the finger touch sensor 12 transmits the fingerprint to the user interface 16. If the area touched by the user covers two icons or falls partly on one icon and partly outside, then there may be different algorithms to determine whether it has to be treated as touching the particular icon.

The user interface 16 checks whether the fingerprint has a match in the database 18. If a match is found, then the user interface 16 checks whether the fingerprint has an associated function 20. If there is an associated function 20, then the associated function 20 gets executed. Otherwise the finger touch is ignored. It is also possible that if there is no function associated to a fingerprint, a default function is executed.

If the fingerprint has a set of associated functions 20, a particular function gets executed depending upon the state machine used by the user interface. Or a plurality of functions 20 associated to the fingerprint may get executed.

The user interface 16 displays different icons on the display 14 based on the current state machine. The user interface 16 may also have different levels or depths of displaying icons or menus on the display. At the highest level of the user interface 16, the user interface 16 may display only the main icons on the display 14. By touching one of the main icons, the user interface may go to next level, where other icons are displayed depending upon the state machine. Based on the functionalities attached to each of the icons, the user interface 16 may go to different levels or depths.

Shown in fig. 2 is the electronic device 10. The electronic device 10 is shown as having hard keys 200 which may be used to select different application and/or to power on the electronic device 10. Shown in figure 2 is a screen of a radio application 22 running in the electronic device 10. The radio application 22 is the one which activates the radio. The radio application

may be activated through a hard key or through an icon displayed by the user interface 16. The radio may comprise different hardware components like tuner, pre-amplifier, amplifier etc. which are not shown in figure. The radio tunes to a frequency and starts outputting the music. The radio application 22 displays different screens where different icons are displayed. One such typical screen is shown in figure 2 which shows a list of presets 202 displayed as icons. Presets are the radio stations or the radio frequencies which are stored in memory and can be recalled by touching the icon. Recalling of a preset refers to tuning the radio to that particular frequency.

As the invention proposes providing different functions/features to different users when they touch the icon, the working of the invention is as below:

In fig. 2, When Radio is active, when user1 touches the preset1; the finger touch sensor 12 detects the touch of the finger. It receives the fingerprint and sends the fingerprint to the user interface 16. The user interface checks in the database to match a fingerprint with the touched finger. Suppose the match occurs with a fingerprint from the database which corresponds to user1, then the preset1 associated with user1 is retrieved. The preset1 represents a particular frequency which is corresponding to a radio station. This frequency is used to program the tuner and radio starts outputting the music transmitted by the programmed radio station. When the preset1 corresponding to user1 is being played, if user2 presses preset1, the finger touch sensor 12 detects the touch of the finger. It receives the fingerprint and sends the fingerprint to the user interface 16. The user interface checks in the database to match a fingerprint with the pressed fingerprint. In this case the match occurs for the fingerprint from the database which corresponds to user2. The user interface 16 retrieves the preset1 corresponding to user2 and starts playing.

Shown in fig.3 is a navigation application running on the electronic device. The electronic device also comprises a navigation unit which is not shown in figure. The navigation unit may further comprise a position finding device, a route calculation means, route guidance means, a map display means. The users can store their destinations and give a name like Home, Office etc to the stored destinations represented by the icons 302. Different users can store different destinations under these names, for example, user1 stores his home address, his office address, user2 stores his home address and office address under these icons.

The navigation application when executed configures the electronic device for navigation and the user interface 16 displays the navigation icons 302. The icons displayed may be 'Home', 'Office'.

When the navigation icons are displayed, if the user1 touches the icon 'Home', the function associated to the fingerprint retrieves home address of the user1. If user2 touches the icon 'Home', the home address corresponding to the user2 is retrieved.

Thus by using a single icon, different users can access functions and/or data which are specific to them. The user specific functions and/or data are accessed dynamically every time a finger touch is detected. Thus the different users feel that the user interface is running the functions which are specific to them at the same time.

Claims:

1. An electronic device (10) comprising:
- a plurality of biometric data sets (18)
- a finger touch sensor (12) having a biometric sensor configured to receive a biometric input at a location within the area of the finger touch sensor (12), a display (14) laid over the finger touch sensor (12); the display (14) adapted to display a plurality of icons, each icon being associated with a plurality of functions (20); each function (20) being associated to at least one biometric data set (18)
- a user interface (16) adapted to verify the authenticity of the biometric input by comparing the biometric input with the biometric data sets (18); said user interface 16 means further adapted to execute a function (20) associated to the said icon and the said biometric input

2. An electronic device (10) according to claim 1 wherein the biometric input is a fingerprint

3. An electronic device (10) according to claim 1 wherein the electronic device further comprises a radio application (22)

4. An electronic device according to claim 1 wherein the electronic device further comprises a navigation application (24)

5. A method to execute user specific functions associated to the said user, the said method comprising the steps:
- receiving a biometric input of an user
- verifying in the database for a match for the received biometric input
- retrieving a function associated to the said biometric input and executing it

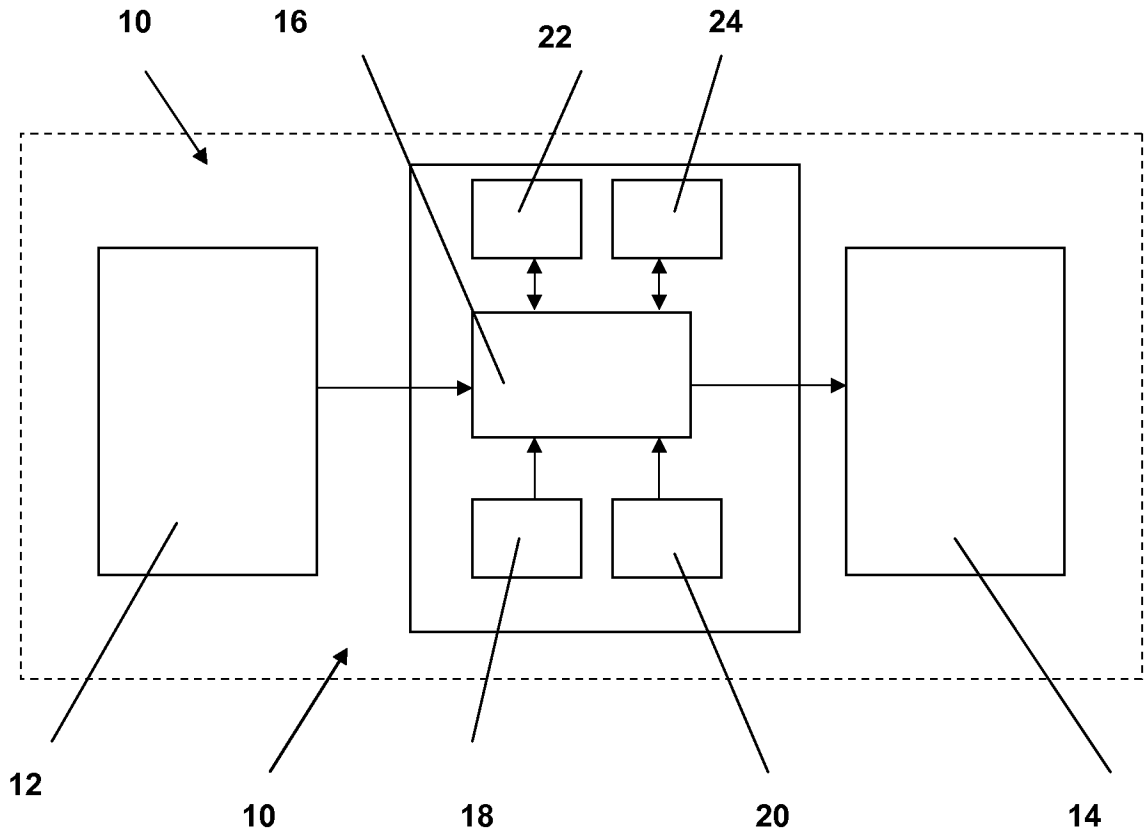


Fig. 1

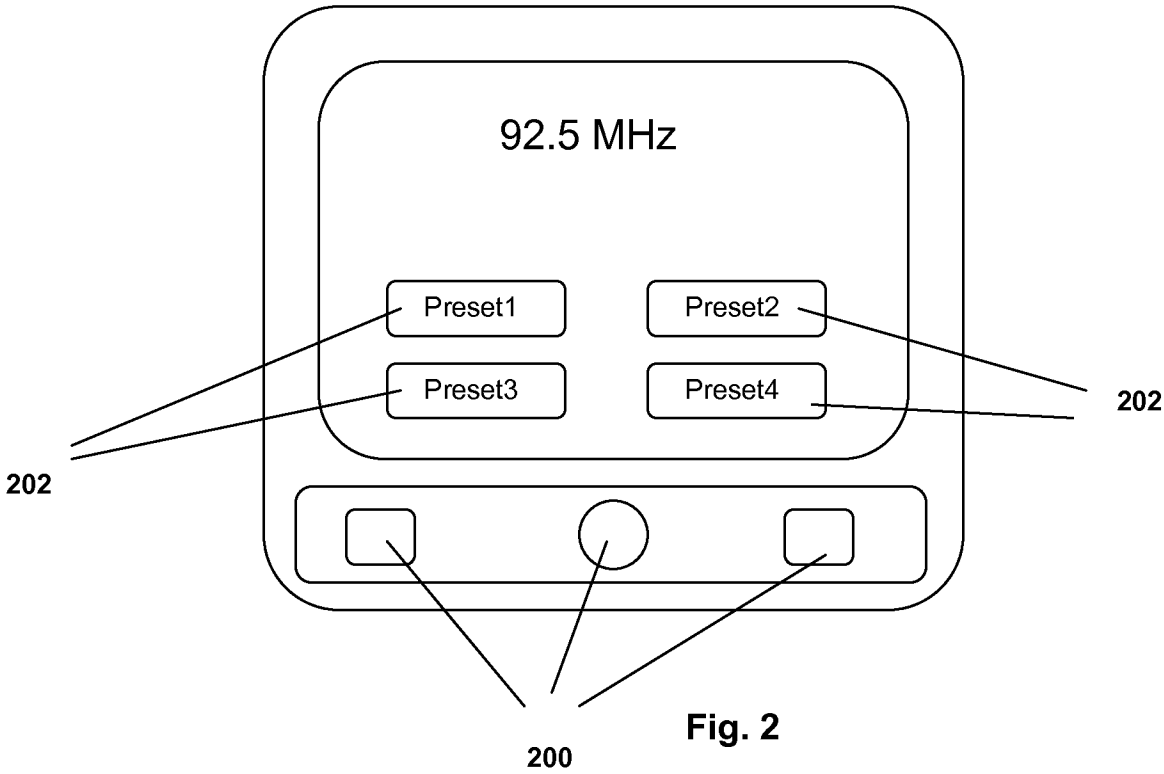

92.5 MHz
Preset1
Preset2
Preset3
Preset4
202
202
200

Fig. 2

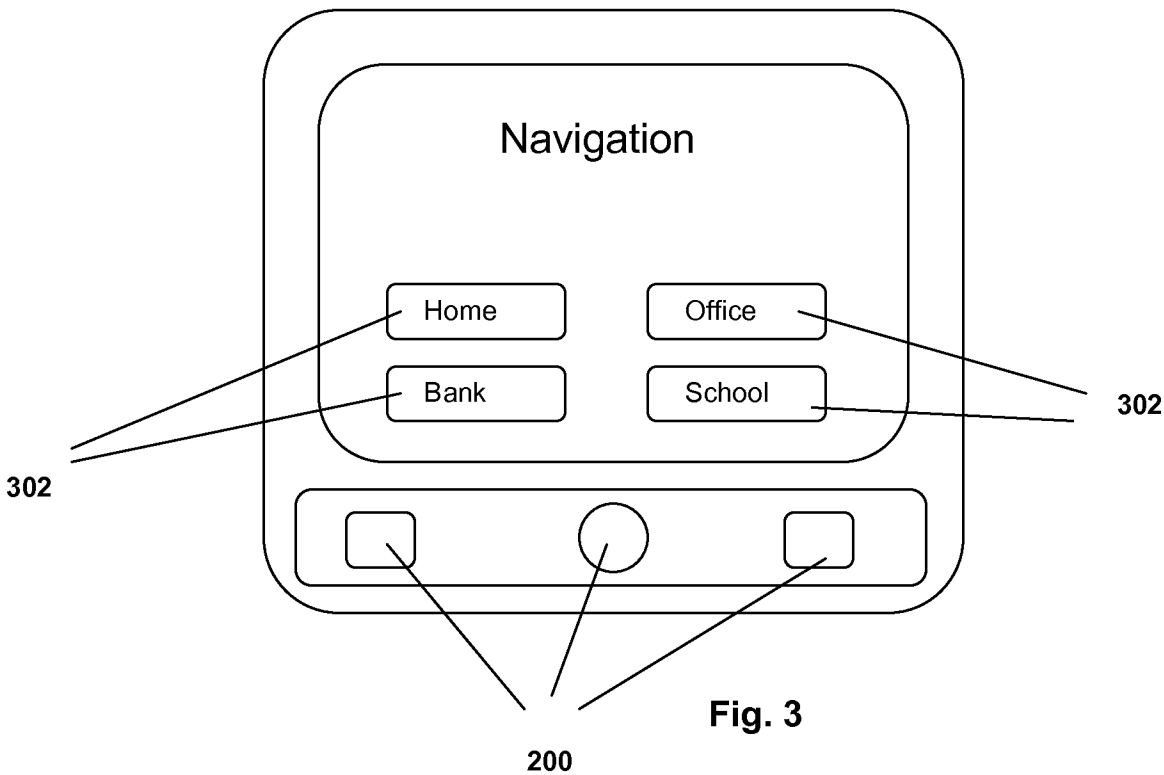

Navigation
Home
Office
Bank
School
302
302
200

Fig. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/063032

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F21/20
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/025626 A1 (INAMI AKIKO [JP]) 3 February 2011 (2011-02-03) the whole document GPS implies presence of a navivation application. paragraph [0042] - paragraph [0090]; claim 18; figures 1-8 -----	1-5
X	US 2010/265204 A1 (TSUDA TAKAMOTO [SE]) 21 October 2010 (2010-10-21) the whole document -----	1-5
	-/--	

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 September 2012	19/09/2012

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/063032

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SUGIURA A ET AL: "A USER INTERFACE USING FINGERPRINT RECOGNITION - HOLDING COMMANDS AND DATA OBJECTS ON FINGERS -", 1 January 1998 (1998-01-01), UIST '98. 11TH ANNUAL SYMPOSIUM ON USER INTERFACE SOFTWARE AND TECHNOLOGY. PROCEEDINGS OF THE ACM SYMPOSIUM ON USER INTERFACE SOFTWARE AND TECHNOLOGY. SAN FRANCISCO, CA, NOV. 1 - 4, 1998; [ACM SYMPOSIUM ON USER INTERFACE SOFTWARE AND TECHNOLOGY], NEW, XP000970928, ISBN: 978-1-58113-034-8 the whole document -----	1-5

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2012/063032

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011025626 A1	03-02-2011	JP 2011034140 A	17-02-2011
		KR 20110013296 A	09-02-2011
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US 2010265204 A1	21-10-2010	EP 2422256 A1	29-02-2012
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		WO 2010122380 A1	28-10-2010