Title: METHOD AND DEVICE FOR DISPLAYING VISUAL REPRESENTATIONS OF A PLURALITY OF ITEMS

Abstract: A method of displaying visual representations of a plurality of items, which method comprises the steps of allowing a user to influence a rate of movement of the visual representations of the plurality of items and displaying the visual representations at the rate of movement. A larger amount of visual representations is displayed when the rate of movement is higher and a smaller amount of visual representations is displayed when the rate of movement is lower. The method can be performed by an electronic device, possibly enabled by a computer program product.
Method and device for displaying visual representations of a plurality of items

The invention relates to a device for displaying visual representations of a plurality of items.

The invention also relates to a method of displaying visual representations of a plurality of items.

The invention further relates to a computer program product comprising software for enabling a programmable device to perform a method of displaying visual representations of a plurality of items.

An example of such a method is known from WO 01/29702. The known method displays a continuously scrolling sequence of visual representations of images in a browsing area. A user can select a representation, which results in the full image being shown in a display area. The scrolling speed and direction can be varied with an input stroke in the browsing area. It is a disadvantage of the known method that it is not possible to browse through the images at higher speeds and still find an image. At higher speeds, the user can no longer distinguish one visual representation from another.

It is a first object of the invention to provide an electronic device of the type described in the opening paragraph, which allows a user to browse through a plurality of items at higher speeds and still find an item among the items.

It is a second object of the invention to provide a method of the type described in the opening paragraph, which allows a user to browse through a plurality of items at higher speeds and still find an item among the items.

According to the invention, the first object is realized in that the electronic circuitry is configured to allow a user to influence a rate of movement of visual representations of a plurality of items and display the visual representations at the rate of movement, a larger amount of visual representations being displayed when the rate of movement is higher and a smaller amount of visual representations being displayed when the
rate of movement is lower. When a user wants to find a specific item, e.g. a song or an image, he can start browsing the visual representations at a high speed by increasing the rate of movement of the visual representations. As soon as the user observes that he is near the specific item, he can reduce the rate of movement. By displaying a large amount of visual representations when the rate of movement is higher, the user can use the position of a visual representation relative to other visual representations so as to find the specific item. For example, the user may recognize the clustering of the dominant colors of the visual representations, e.g. album covers, and thereby recognize whether he is near the specific item.

Alternatively or additionally, the visual representations can be ordered or grouped, e.g. by genre, artist name, album/song title and/or year of release. If the visual representations are grouped, the group label may be indicated near the visual representation belonging to that group. The visual representations which are displayed at a higher rate of movement do not need to be exactly the same as the visual representations displayed at a lower rate of movement. The visual representations preferably have a smaller size when a large amount of visual representations is displayed. Smaller visual representations do not need to have the same level of detail as larger visual representations. For example, a smaller visual representation of an album may consist of a unicolored area with the dominant color of the album.

In an embodiment of the electronic device of the invention, the electronic circuitry is further configured to decrease the rate of movement of the visual representations if no user input is received. This provides a novel and intuitive way of browsing through the plurality of items, resembling the rotation of a real wheel with the normal physical forces being applied to it.

The electronic circuitry may further be configured to highlight a specific one of the visual representations and select the highlighted visual representation when the movement of the visual representations has stopped. This allows a user to select visual representations in a manner which resembles rotating a wheel of fortune.

The visual representations may jointly form a surface of a body. The position of a visual representation relative to other visual representations will be clearer to a user when they jointly form a surface of a body.

The body may be wheel-shaped. When wheel visualization is used to represent the plurality of items, it will be easier for a user to understand that the first in the series of visual representations is represented before the second visual representation as well as after
the last visual representation. The same effect can be achieved when the body has other shapes, e.g. when it is ball-shaped, but wheel visualization is regarded as being more intuitive.

According to the invention, the second object is realized in that the method comprises the steps of allowing a user to influence a rate of movement of the visual representations of the plurality of items and displaying the visual representations at the rate of movement, a larger amount of visual representations being displayed when the rate of movement is higher and a smaller amount of visual representations being displayed when the rate of movement is lower.

In an embodiment of the method of the invention, the method further comprises the step of decreasing the rate of movement of the visual representations if no user input is received.

The method may further comprise the steps of highlighting a specific one of the visual representations and selecting the highlighted visual representation when the movement of the visual representations has stopped.

These and other aspects of the invention are apparent from and will be further elucidated, by way of example, with reference to the drawings, in which:

Fig. 1 is a flow diagram of the method of the invention;

Fig. 2 shows an example of visual representations being displayed at a lower rate of movement;

Fig. 3 shows an example of visual representations being displayed at a higher rate of movement; and

Fig. 4 is a block diagram of the electronic device of the invention.

Corresponding elements in the drawings are denoted by the same reference numerals.

The method of the invention comprises a step 1 and a step 3, see Fig. 1. Step 1 comprises allowing a user to influence a rate of movement of the visual representations of the plurality of items. Step 3 comprises displaying the visual representations at the rate of movement, a larger amount of visual representations being displayed when the rate of
movement is higher and a smaller amount of visual representations being displayed when the rate of movement is lower.

Figs. 2 and 3 show an example in which 3D wheel visualization is used to show and browse a music collection. When navigating through media content at high speeds, the visualization of this wheel is at a distance, see Fig. 3. At slow speeds, the wheel is zoomed in and allows users to visually recognize covers. In both Figures, the music is grouped by genre and the genre is indicated below the group. Fig. 2 further illustrates that a highlighted visual representation is selected when movement of the visual representations has stopped. In Fig. 2, the name of the current track is displayed underneath the cover of the selected album.

A numerical indication behind the tracks shows the amount of tracks available within the album. If there is more than one track available within an album, the up/down input on a user's controller may allow him to step through the tracks within that album.

The rate of movement of the visual representations may be controllable by using gesture movements. For example, finger movements on a track pad may be linked to turning actions on the wheel. With left and right movements, the user may be able to turn the wheel and navigate through media content. The user may be able to speed up the turning of the wheel and slow down the movement by counter gestures. The user may be able to immediately stop the movement, e.g. by touching the surface of his touchpad. The speed and acceleration of the movement may depend on the speed and distance at which the user slides his finger across the surface of his touchpad. The wheel may also slowly reduce speed when no user input is given, as with a flywheel. By using slow gesture movement, the user can browse item by item, having a fine control of browsing. The wheel visualization may comprise more than one ring, e.g. a ring with a personal collection and a ring with a music provider collection. The user may be able to switch between rings. Depth may be used in visualizing a subset of the collection. For example, items in a playlist may be pulled to the foreground or items not in the playlist may be pushed to the background and a user can be restricted in his navigation to items in the playlist.

Fig. 4 shows the electronic device 31 of the invention. The electronic device 31 comprises electronic circuitry 33 configured to allow a user to influence a rate of movement of visual representations of a plurality of items and display the visual representations at the rate of movement, a larger amount of visual representations being displayed when the rate of movement is higher and a smaller amount of visual representations being displayed when the rate of movement is lower. The electronic device 31 may further comprise a storage means 35, a reproduction means 37, an input 39 and/or an
output 41. The electronic device 31 may be a professional device or a consumer device, for example, a stationary or a portable device. The electronic circuitry 33 may be a general-purpose or an application-specific processor and may be capable of executing a computer program.

The storage means 35 may comprise, for example, a hard disk, a solid-state memory, an optical disc reader or a holographic storage means. The storage means 35 may store the plurality of items. The reproduction means 37 may comprise, for example, a display and/or a loudspeaker. The visual representations may be displayed on the reproduction means 37. Alternatively, the output 41 may be used to display the visual representations on an external display (not shown). The input 39 and output 41 may comprise, for example, a network connector, e.g. a USB connector or an Ethernet connector, an analog audio and/or video connector, such as a cinch connector or a SCART connector, or a digital audio and/or video connector, such as a HDMI or SPDIF connector. The input 39 and output 41 may comprise a wireless receiver and/or transmitter.

While the invention has been described in connection with preferred embodiments, it will be understood that modifications thereof within the principles outlined above will be evident to those skilled in the art, and thus the invention is not limited to the preferred embodiments but is intended to encompass such modifications. The invention resides in each and every novel characteristic feature and each and every combination of characteristic features. Reference numerals in the claims do not limit their protective scope. Use of the verb "to comprise" and its conjugations does not exclude the presence of elements other than those stated in the claims. Use of the article "a" or "an" preceding an element does not exclude the presence of a plurality of such elements.

The invention can be implemented by means of hardware comprising several distinct elements, and by means of a suitably programmed computer. 'Computer program product' is to be understood to mean any software product stored on a computer-readable medium, such as a floppy disk, downloadable via a network, such as the Internet, or marketable in any other manner.
CLAIMS:

1. An electronic device (31) comprising electronic circuitry (33) configured to:
- allow a user to influence a rate of movement of visual representations of a plurality of items; and
- display the visual representations at the rate of movement, a larger amount of visual representations being displayed when the rate of movement is higher and a smaller amount of visual representations being displayed when the rate of movement is lower.

2. An electronic device as claimed in claim 1, wherein the electronic circuitry is further configured to decrease the rate of movement of the visual representations if no user input is received.

3. An electronic device as claimed in claim 2, wherein the electronic circuitry is further configured to:
- highlight a specific one of the visual representations; and
- select the highlighted visual representation when the movement of the visual representations has stopped.

4. An electronic device as claimed in claim 1, wherein the visual representations jointly form a surface of a body.

5. An electronic device as claimed in claim 4, wherein the body is wheel-shaped.

6. A method of displaying visual representations of a plurality of items, the method comprising the steps of:
- allowing (1) a user to influence a rate of movement of the visual representations of the plurality of items; and
- displaying (3) the visual representations at the rate of movement, a larger amount of visual representations being displayed when the rate of movement is higher and a smaller amount of visual representations being displayed when the rate of movement is lower.
7. A method as claimed in claim 6, further comprising the step of decreasing the rate of movement of the visual representations if no user input is received.

8. A method as claimed in claim 7, further comprising the steps of:
   - highlighting a specific one of the visual representations; and
   - selecting the highlighted visual representation when the movement of the visual representations has stopped.

9. A method as claimed in claim 6, wherein the visual representations jointly form a surface of a body.

10. A computer program product comprising software for enabling a programmable device to perform the method of claim 6.
## A. CLASSIFICATION OF SUBJECT MATTER

**INV.** G06F3/048

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 H04M H04N**

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 practical, search terms used)

**EPO-Internal, IBM-TDB**

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C

See patent family annex

### Date of the actual completion of the international search

6 September 2007

### Date of mailing of the international search report

17/09/2007

### Name and mailing address of the ISA/

European Patent Office, P B 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel (+31-70) 340-2040, Tx 31 651 epo nl, Fax (+31-70) 340-3016

Authorized officer

Schröter, Marcel
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