Title: SALIENCE-SENSITIVE IMAGE-BASED PRESENTATION OF A CONTACT DIRECTORY

Abstract: A graphical user interface for representing a group of contacts is provided. The interface includes a group of images having a variety of different sizes. Images that correspond to people contacted by a user more frequently are larger than other images. Images that correspond to people contacted by the user most recently are placed toward the front of the interface. The user may obtain contact information by using a pointing device to position a cursor over an appropriate image and then making a selection.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
SALIENCE-SENSITIVE IMAGE-BASED PRESENTATION OF A CONTACT DIRECTORY

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to contact directories. In particular, the invention relates to a contact directory that contains images representing the individuals included in the directory.

Description Of Related Art

Typical contact directories include an alphabetical listing of entries with corresponding contact information. Contact information may include phone numbers, addresses and electronic mail (e-mail) addresses. When using typical contact directories, users are required to identify a person by the spelling of the person's name. Some contact directories allow users to perform searches on fields such as the company a person is associated with, the person's name or other information. Because of the crude graphical interface that is often presented to users of typical contact directories, many users have found it difficult to quickly and accurately retrieve contact information.

Therefore, there exists a need in the art for a graphical user interface for a contact directory that allows users to quickly and accurately retrieve contact information.
SUMMARY OF THE INVENTION

It is an object to the present invention to provide a convenient graphical user interface for a contact directory. It is a further object of the present invention to provide a graphical user interface that includes a mosaic of images wherein the placement of the images conveys information to a user. It is yet another object of the invention to provide a graphical user interface that includes a mosaic of images wherein the relative sizes of the images conveys information to a user.

These and other objects are achieved in a method of representing contacts. The method includes the steps of representing a first contact with a first image and representing a second contact with a second image. A mural is then created that contains the first and second images such that the relative sizes of the first and second images is a function of the frequency with which a user has contacted the first and second contacts. The first image is larger than the second image when the user has contacted the first contact more frequently than the user has contacted the second contact. Furthermore, the first image is placed in front of the second image when the user has contacted the first contact more recently than the user has contacted the second contact.

In another embodiment of the invention, a method of providing and selecting elements on a computer display is provided. The method includes the steps of displaying a first picture on the display representing a first contact and displaying a second picture on the display representing a second contact. A picture selection signal indicative of a user interface selection device selecting one of the first and second contacts is received. Next, information relating to the first or the second contact is presented in response to the picture selection signal. The relative sizes of
the first and second images is a function of the frequency with which a user has contacted the first and second contacts.

BRIEF DESCRIPTION OF DRAWINGS

The invention will be described in detail in the following description of preferred embodiments with reference to the following figures wherein:

FIG. 1 is a graphical user interface for requesting contact information in accordance with an embodiment of the invention;

FIG. 2 is a block diagram of computer system in accordance with an embodiment of the invention;

FIG. 3 illustrates a method of generating a graphical user interface in accordance with an embodiment of the invention;

FIG. 4 is a functional block diagram illustrating how a display may be generated in accordance with an embodiment of the invention; and

FIG. 5 shows HTML code that may be generated by the dynamic HTML generator in accordance with an embodiment of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

FIG. 1 shows a mosaic graphical user interface 100 that can be used to represent contacts in accordance with an embodiment of the invention. Mosaic 100 may be used to represent elements of an e-mail address book, fax numbers or telephone numbers, or any other contact information. Each contact may be represented with an image. As shown in FIG. 1, mosaic 100 includes images of faces (e.g., photographs) of varying sizes that are placed in a variety of locations.
The relative size of each of the images included in mosaic 100 may be chosen such that the images selected more frequently appear larger than the images selected less frequently. For example, when looking at mosaic 100, the user would realize that image 102 has been selected more frequently than image 104. The relative position of each image may also be used to provide information to the user. For example, images that have been selected more recently may be placed toward the front of mosaic 100.

Mosaic graphical user interface 100 provides many advantages over existing user interfaces that are used to retrieve contact information. One of the advantages is that each contact is represented with an image. The images may be photographs that have been scanned and saved in digital formats such as JPG or GIF. The images may also be digital versions of hand sketches prepared by a user. Alternatively, each contact may be represented by another representation, such as an image template, a written name, initials, a nickname or symbol. Users can typically identify a person from a graphical representation of the person faster than they can identify the same person from a list of names.

Mosaic graphical user interface 100 can be used in conjunction with several software programs. In one embodiment of the invention, each image represents an entry in an e-mail address book. When the user selects an image, an e-mail message addressed to the appropriate person is generated. Designing software that performs functions such as generating e-mail messages after a user makes a selection with a pointing device is well within the skill of a practitioner in the art. In alternative embodiments, information such as the person's address, fax number or telephone number may be displayed after selecting an image.
Turning to FIG. 2, a system for generating mosaic 100 (shown in FIG. 1) will be described. One skilled in the art will appreciate that several combinations of hardware and software may be utilized to create mosaics similar to mosaic 100 and that the system shown in FIG. 2 is only one example. The system shown in FIG. 2 includes a computer 200 that includes a central processor unit 202 for controlling the overall operation of the computer. A system bus 204 couples various system components to the central processor unit 202.

A dynamic HTML generator 206 can be used to generate HTML code. The operation of dynamic HTML generator 206 will be described in detail below. An image database 208 may store digital images and a contact information database 210 may store information relating to the contacts made by the user and their relative frequency of use. Computer 200 may also include a video adapter 212 coupling a display device 210 to system bus 204. Display device 210 may include a cathode ray tube (CRT), liquid crystal display (LCD), field emission display (FED), plasma display or any other device that produces an image that is viewable by the user. Furthermore, computer 200 and display device 210 may form part of a mobile terminal, personal digital assistant or any other device that has a directory of contacts.

The images shown in FIG. 1 can be rectangular in shape. Alternatively, the images can be cropped to maximize the number of images that can be included in mosaic 100. In one embodiment, software can be utilized to automatically crop each image to only include the face sections. A user may also manually crop some or all of the images.

A user can select images from the mosaic 100 (shown in FIG. 1) with a variety of input devices. FIG. 2 shows a serial port interface 214 coupling a pointing device
216 to system bus 204. Pointing device 216 may be implemented with a mouse, trackball, pen device, touch sensitive screen, joystick or similar device.

The user can communicate with other users connected to Internet 218 by utilizing a modem 220. Communication can be made with other computers connected a local area network (LAN) 222 via a network interface 224.

A brief overview of the steps that may be performed when creating a mosaic will now be given with reference to FIG. 3 and then a specific example will be given with reference to FIG. 4. FIG. 3 illustrates the steps that may be performed by HTML generator 206 and one or more of the other elements shown in FIG. 2. In step 302, each contact is ranked. The rankings may be based on variables such as the frequency with which the contact has been selected and the length of time since the contact has been selected. Next, in step 304 HTML generator 206 generates HTML code to create a mosaic. HTML code may reference images representing each one of the contacts and include commands for placing each one of the images in a specific location with a specific size. Images representing the contacts may be stored in a database such as image database 208 (shown in FIG. 2). In step 306, images from image database 208 are linked with the HTML code generated with HTML generator 206. Linking may involve simply locating the images and the HTML code in a common directory. The resulting mosaic is displayed on a display device, such as display device 210 (shown in FIG. 2) in step 308. The user may then position the cursor over one of the images and make a selection choice with a pointing device in step 310. Finally, in step 312 contact information may be displayed to the user. Of course, the display may be in the form of addressing an e-mail message to an appropriate party. Computer-executable instructions for performing the presently
disclosed methods may be stored on a computer-readable medium, such as a magnetic
or optical disk.

FIG. 4 illustrates a specific example of how the system shown in FIG. 2 may
operate. Image database 208 contains images representing Shannon 402, Tom 404,
and Jim 406. In one embodiment of the invention, the images are JPG files that have
been cropped as described above. Contact information database 210 contains
information relating to the contacts made by the user to Shannon, Tom, and Jim. In
the example shown in FIG. 4, sending an e-mail message to one of the parties may be
considered to be making a contact. Entry 408 shows that the user has contacted
Shannon thirty times and has last contacted her on 2/2/01. Entries 410 and 412 show
the contact information for contacts made with Tom and Jim respectively.

Dynamic HTML generator 206 (shown in FIG. 2) may then use the
information contained in image database 208 and contact information database 210 to
create HTML code that will result in an appropriate mosaic 414. Utilizing the
information shown in FIG. 4, dynamic HTML generator 206 may generate HTML
code that includes segments similar to the code segments shown in FIG. 5. The code
segments shown place JPG images at appropriate places within a table. Line 502
includes commands for setting that width and height of image file Jim.jpg. Lines 504
and 506 include commands for setting the width and height of image files
Shannon.jpg and Tom.jpg, respectively.

There are number of ways that dynamic HTML generator 206 can size images.
In one embodiment, each image has a unique size. In an alternative embodiment, a
specific group of sizes is created and each image is assigned to one of the assigned
sizes. For example, a first size could correspond to less than 10 contacts, a second
size could correspond to between 10 and 25 contacts and a final size could correspond
to more than 25 contacts. Each image would have one of the three sizes. Of course,
the size of each image may be a function of the relative number of contacts to prevent
all or several images from being the same size after a predetermined number of
contacts.

Mosaic 414 (shown in FIG. 4) is a mosaic that may result from the HTML
code segments shown in FIG. 5. Contact information database 210 shows that the
user has contacted Jim the fewest number of times. Accordingly, the image of Jim
included in mosaic 414 has the smallest size. Furthermore, contact information
database 210 shows that the user has most frequently contacted Shannon. This
information is conveyed to the user by mosaic 414 including an image of Shannon
that is larger than the other images.

Having described preferred embodiments of a novel contact directory (which
are intended to be illustrative and not limiting), it is noted that modifications and
variations can be made by persons skilled in the art in light of the above teachings. It
is therefore to be understood that changes may be made in the particular embodiments
of the invention disclosed which are within the scope and spirit of the invention as
defined by the appended claims.

Having thus described the invention with the details and particularity required
by the patent laws, what is claimed and desired protected by Letters Patent is set forth
in the appended claims.
What is claimed is:

1. A method of representing contacts in an electronic communication system, the method comprising the steps of:
   (a) representing a first contact with a first image;
   (b) representing a second contact with a second image; and
   (c) generating a mosaic that contains the first and second images such that the relative sizes of the first and second images is a function of the frequency with which a user has contacted the first and second contacts.

2. The method of claim 1, wherein the first image is larger than the second image when the user has contacted the first contact more frequently than the user has contacted the second contact.

3. The method of claim 1, wherein step (c) further includes placing the first and second images in locations that are functions of the elapsed times since the user has contacted the first and second contacts.

4. The method of claim 3, wherein the first image is placed in front of the second image when the user has contacted the first contact more recently than the user has contacted the second contact.

5. The method of claim 1, further including the step of:
(d) in response to the user selecting one of the first and second images, generating an electronic mail message addressed to the first or second contact.

6. In a computer system having a graphical user interface including a display and a user selection device, a method of providing and selecting from elements on the display, comprising the steps of:

(a) displaying a first picture on the display representing a first contact;
(b) displaying a second picture on the display representing a second contact;
(c) receiving a picture selection signal indicative of the user interface selection device selecting one of the first and second contacts;
(d) presenting information relating to the first or the second contact in response to step (c); and

wherein the relative sizes of the first and second images is a function of the frequency with which a user has contacted the first and second contacts.

7. The method of claim 6, wherein the first image is larger than the second image when the user has contacted the first contact more frequently than the user has contacted the second contact.

8. The method of claim 6, wherein steps (a) and (b) further include placing the first and second images in locations that are functions of the elapsed time since the user has contacted the first and second contacts.
9. The method of claim 8, wherein the first image is placed in front of the second image when the user has contacted the first contact more recently than the user has contacted the second contact.

10. A computer configured to generate a mosaic of images representing contacts, the computer comprising:
    a database of images of people contacted by a user;
    a database of contact information identifying people contacted by the user, the number of times each person has been contacted by the user and the elapsed time since the user has contacted each person;
    a software module that retrieves images from the database of images and creates a mosaic of images; and
    wherein the size and location of the images included in the mosaic of images are functions of the information included in the database of contact information.

11. A computer-readable medium having computer-executable instructions for performing the steps:
    (a) representing a first contact with a first image;
    (b) representing a second contact with a second image; and
    (c) generating a mosaic that contains the first and second images such that the relative sizes of the first and second images is a function of the frequency with which a user has contacted the first and second contacts.
12. The computer-readable medium of claim 11, wherein the first image is larger than the second image when the user has contacted the first contact more frequently than the user has contacted the second contact.

13. The computer-readable medium of claim 11, wherein step (c) further includes placing the first and second images in locations that are functions of the elapsed times since the user has contacted the first and second contacts.

14. The computer-readable medium of claim 11, further including computer-executable instructions for performing the step of:

(d) in response to the user selecting one of the first and second images, generating an electronic mail message addressed to the first or second contact.

15. A mobile terminal configured to generate a mosaic of images representing contacts, the mobile terminal comprising:

a database of images of people contacted by a user;

a database of contact information identifying people contacted by the user, the number of times each person has been contacted by the user and the elapsed time since the user has contacted each person;

a software module that retrieves images from the database of images and creates a mosaic of images; and

wherein the size and location of the images included in the mosaic of images are functions of the information included in the database of contact information.
Figure 3

1. Rank Contacts
2. Generate HTML to Resize Images Based on Ranking
3. Link Images with HTML
4. Display Mosaic on Monitor
5. Receive Selection Choice From Pointing Device
6. Display Contact Information
Figure 4
<table>
<thead>
<tr>
<th>Jim</th>
<th>Shannon</th>
<th>Tom</th>
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Figure 5
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7  G06F17/60

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)

IPC 7  G06F H04L

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)

IBM-TDB, INSPEC, EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>Y</td>
<td>US 5 778 054 A (KIMURA YUJI ET AL) 7 July 1998 (1998-07-07) abstract column 10, line 36 -column 10, line 53 figures 4B,4C,5,8,9</td>
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<td>US 5 812 770 A (SAKAI MASATO) 22 September 1998 (1998-09-22) column 2, line 6 -column 2, line 41 column 3, line 38 -column 3, line 44</td>
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* Further documents are listed in the continuation of box C.

* Patent family members are listed in 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 document 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

* "I*" 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

* "X*" document member of the same patent family

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Authorized officer: Abbing, R
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