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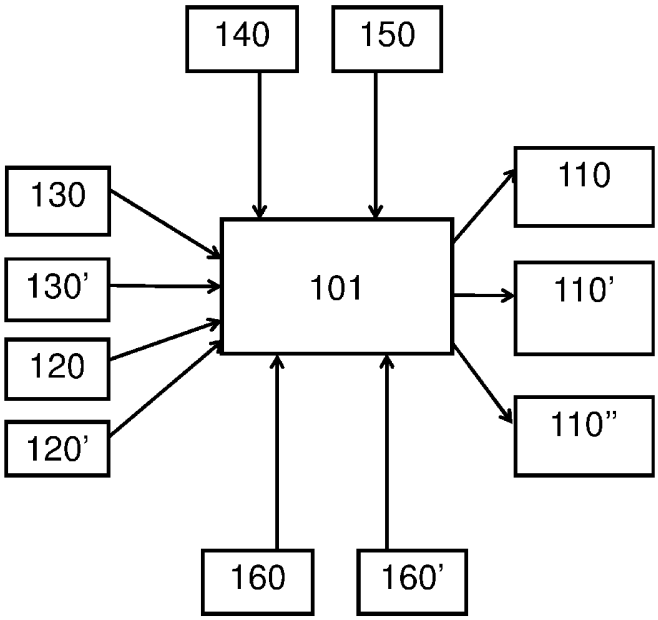

Fig. 2

(57) Abstract: A method and system for selection of at least one menu item, the method comprises monitoring selection of a plurality of menu items by the user: assigning an adaptive priority to each of the plurality of menu items in response to the step of monitoring, the adaptive priority ranging from at least one highest priority menu item to at least one lowest priority menu item, assigning a predetermined default priority to each menu item, the step of monitoring further comprises the step of determining length of time dwelt on each selected item; the step of assigning an adaptive priority further comprises the step of assigning priority to each of the plurality of menu items in response to length of dwelt time, wherein the highest priority menu items are assigned in response to longest dwelling time and the lowest priority menu items are selected in response to shortest dwelling time.

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A SYSTEM FOR DYNAMIC MENUS

FIELD OF INVENTION

The invention relates to systems generating computer – generated interactive menus on displays.

BACKGROUND

In reviewing a menu, a large number of actions are performed. Manual reviews of printed menus are exceedingly difficult and do not effectively monitor and appropriately adjust the menus, e.g. their contents and/or their arrangement. On the other hand, computerized menus, when displayed on appropriate platforms, may allow efficacious collection and analysis of input related to the menu that does allow the appropriate adjustment in a realistic time frame.

US 5,396,264 to Motorola Inc. describes a portable information display device such as a pager, that has a plurality of operating modes and a corresponding plurality of menu items. A symbol corresponding to each menu item is displayed on a display in a sequence determined by a priority of the menu item. The priority of each menu item is determined in response to either a frequency of selection of the corresponding operating mode, or a default value assigned to the menu item, or both.

However, such data-carrier based menu management systems have too limited options to display the menu contents, as a result of the particular inputs the systems receive. One goal is to provide a system that allows for varied dynamic presentation.

SUMMARY

According to one aspect, a method for dynamically arranging display of a computerized menu that comprises items is provided, the method comprising:

providing at least one computer system and a display operationally connected thereto;

providing the computer system with the menu, perusal variables, a default arrangement and at least a first set of alternative arrangements, wherein each alternative arrangement comprises reference perusal values, each reference perusal value being associated with one of said perusal variables;

displaying the menu on the display in the default arrangement ;

perusing items on the displayed menu;

assigning perusal values to the perusal variables according to the perusal;

redisplaying the menu on the display in a first alternative arrangement, if there is a match of the perusal values and the reference perusal values of the first alternative arrangement, and if there is no match thereof, redisplaying the menu on the display in the default arrangement.

In some embodiments the method further comprises:

further providing the computer system with environmental variables and at least a second set of alternative arrangements, wherein each alternative arrangement comprises environment reference values, each environmental reference value being associated with one of said environmental variables;

providing environmentally-sensitive sensors operationally connected to the computer system and in the vicinity of the screen;

measuring the environment ;

assigning environment values to the environment variables according to the environment measurements;

redisplaying the menu on the display in a second alternative arrangement if there is a match of the environmental reference values in the second alternative arrangement and the environmental values.

In some embodiments, if there is no match thereof, the menu is redisplayed on the display in the default arrangement.

In some embodiments, at least part of the first set of alternative arrangements and the second set of alternative arrangements overlap, such that the computer system comprises a third set of alternative rearrangements, wherein each third alternative arrangement comprises both environment reference values and perusal reference values.

In some embodiments the method further comprises:

starting a session of perusing the menu on the screen;

terminating a session of perusing the menu on the screen;

subsequent to terminating the session displaying the menu on the display in the default arrangement.

In some embodiments the method further comprises replacing the default arrangement with the first, second or a third alternative arrangement, as the default arrangement.

In some embodiments the method of claim further comprises temporarily replacing the default arrangement with the first, second or a third alternative

arrangement, as a default arrangement, until the session of perusing is terminated.

In some embodiments the computer system comprises a group of computers, and wherein the perusing is performed on a first computer from said group of computers, and the terminating of a session of perusing the menu occurs when the first computer is positioned adjacent to a second computer from said group of computers.

In some embodiments the perusing is performed on a computer having a lid, and the terminating of a session of perusing the menu occurs when the lid is closed.

In some embodiments the perusing is performed on a portable computer, and redisplaying the menu on the display is set to the default arrangement if the portable computer is moved between 40 and 120 cm.

In some embodiments the perusing is performed on a portable computer, and redisplaying the menu on the display is set to a fourth alternative arrangement selected according to the first, second or third alternative arrangement.

In some embodiments the perusing is selected from one or more of a group of parameters consisting of: scrolling through items presented on the screen, scrolling through groups of items in the menu, marking items, hiding items, expanding displayed menu items, wherein the variables represent the parameters.

In some embodiments multiple variables represent each parameter.
Some embodiments further comprise assigning real or Boolean perusal values to the perusal variables.

In some embodiments the display is selected from a group consisting of a touch screen and a gesture-sensitive screen.

Some embodiments further provide the computer system with a weight for each displayed item, and assigning perusal values calculated from quotients of the weights and values attributed to the variables according to the perusal parameters.

In some embodiments redisplaying the menu on the display in a first alternative arrangement comprises highlighting a first set of menu items on the display, and wherein each alternative arrangement is associated with a unique set of menu items assigned to be highlighted.

According to another aspect, in an information display device having a menu with a plurality of menu items, a method of providing for selection by a user of at least one of the plurality of menu items comprises the steps of:
monitoring selection by the user of the plurality of menu items: assigning an adaptive priority to each of the plurality of menu items in response to said step of monitoring, said adaptive priority ranging from at least one highest priority menu item to at least one lowest priority menu item, assigning a predetermined default priority to each menu item, said step of monitoring further comprises the step of determining length of time dwelt on each selected item;

said step of assigning an adaptive priority further comprises the step of assigning priority to each of the plurality of menu items in response to length of dwelt time,
wherein the highest priority menu items are assigned in response to longest dwelling time and the lowest priority menu items are selected in response to shortest dwelling time.

In some embodiments the display device has a screen, and the menu items having substantially highest dwelling times are positioned at predetermined priority positions on the screen.

In some embodiments the priority positions comprise the edges of the screen.

In some embodiments said step of monitoring further comprises the step of determining the frequency of selecting each menu item, and said step of assigning an adaptive priority further comprises the step of assigning priority to each of the plurality of menu items in response to the frequency of selecting each menu item.

In some embodiments:
the display device has a screen;
a first predetermined weight is assigned to each menu item according to the frequency of selection thereof and a second predetermined weight is assigned to each item according to the dwelling time thereon;
a third weight is assigned to each item according to a predetermined polynomial performed on the assigned first and second weights,
wherein the items having the highest third weights are positioned at predetermined priority positions on the screen.

In some embodiments the priority positions comprise the edges of the screen.

In some embodiments the highest priority items are highlighted on the display device.

According to another aspect. a computer system configured to allow performing one or more of the methods described above is provided,

According to another aspect, an information display device configured to allow performing the method one or more of the methods described above is provided,

The methods may further comprise:

further providing the computer system with biometric variables and at least a fourth set of alternative arrangements, wherein each alternative arrangement comprises biometric reference values, each biometric reference value being associated with one of said biometric variables;

providing biometrically-sensitive sensors operationally connected to the computer system and in the vicinity of the screen;

measuring the environment ;

assigning biometric values to the biometric variables according to the biometric measurements;

redisplaying the menu on the display in a fourth alternative arrangement if there is a match of the biometric reference values in the fourth alternative arrangement and the biometric values.

Additionally or alternatively, the methods further comprise:

further providing the computer system with biometric variables and at least a fourth set of alternative arrangements, wherein each alternative

arrangement comprises biometric reference values, each biometric reference value being associated with one of said biometric variables;

providing the computer system with means allowing the computer system to receive biometric data and convert the biometric data into biometric values;

assigning the biometric values representing received biometric data to the biometric variables;

redisplaying the menu on the display in a fourth alternative arrangement if there is a match of the biometric reference values in the fourth alternative arrangement and the biometric values.

Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. Although methods and materials similar or equivalent to those described herein can be used in the practice or testing of the present invention, suitable methods and materials are described below. In case of conflict, the patent specification, including definitions, will control. In addition, the materials, methods, and examples are illustrative only and not intended to be limiting. Unless marked as background or art, any information disclosed herein may be viewed as being part of the current invention or its embodiments.

BRIEF DESCRIPTION OF THE FIGURES

Embodiments are herein described, by way of example only, with reference to the accompanying drawings. With specific reference now to the drawings in detail, it is stressed that the particulars shown are by way of example and for purposes of illustrative discussion of the preferred embodiments, and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the embodiments. In this regard, no attempt is

made to show structural details in more detail than is necessary for a fundamental understanding, the description taken with the drawings making apparent to those skilled in the art how several forms may be embodied in practice.

In the drawings:

Figure 1 is a schematic general description of the computer system.

Figure 2 is a schematic general description of interactive menus according to one aspect, exemplified on restaurant menus.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Before explaining at least one embodiment in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments or of being practiced or carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein is for the purpose of description and should not be regarded as limiting. In discussion of the various figures described herein below, like numbers refer to like parts. The drawings are generally not to scale.

For clarity, non-essential elements were omitted from some of the drawings.

According to one aspect, a method for dynamically arranging display of a computerized menu that comprises items is provided, the method comprising the following steps:

- providing at least one computer system and a display operationally connected thereto;
- providing the computer system with the menu, perusal variables, a default arrangement and at least a first set of alternative arrangements, wherein each alternative arrangement comprises reference perusal values, each reference perusal value being associated with one of said perusal variables;
- displaying the menu on the display in the default arrangement;
- perusing items on the displayed menu;
- assigning perusal values to the perusal variables according to the perusal;
- redisplaying the menu on the display in a first alternative arrangement if there is a match of the perusal values and the reference perusal values of the first alternative

arrangement, and if there is no match thereof, redisplaying the menu on the display in the default arrangement.

According to one embodiment, at least some of the perusals are storable in the system as correspondent alternative arrangements. For example, the perusal is carried out on an end-point computer that detects a start and an end to the perusal (according to input from appropriate sensors, as well as the actual perusal parameters, for example the menu items that were selected at the end of the perusal, to help determine an alternative arrangement. Such storage may be automatically stored after the end of the session or manually stored.

Optionally, the arrangement is partially automatically determined by the user's perusal, and is further determined according to manually inputted data, for example by a menu owner that wishes to give regard to the user's preferences but endeavours to bias further perusals by the same user or users with other preferences, to select similar but different menu items.

Such arrangements may also allow better and faster matching of the menu presentation according to similarity of one user's preferences to another user's preferences.

In some embodiments the system is configured to allow recognizing where an order came from, what was ordered and what was presented to the user (default and/or alternative arrangements). The data may be analyzed and the default and/or alternative arrangements may be changed according to the analysis results. The analyses and the changes may be manually or automatically performed; the system in some embodiments is thus be self-adapting/learning.

One way of performing the manual modification is by reviewing the selection, or the entire perusal (for example a playback or a list of parameters with values

according to the perusal), at a central computer, for example a point of sale (POS) computer operationally connected to said end-point computer.

Such POS data collection may include mapping the locations from which the menu is perused, for example a particular section of a factory, or a certain table at a restaurant, or even a specific seat at a table, and thus facilitate the provision of the physical selected items to the exact location of the selection. End-point computers in some embodiments are operationally coupled to GPS devices for such purposes, or other location-informing devices that are currently more accurate.

A central computer, for example at a POS, may receive data of a selection from a menu displayed at a certain location, and the arrangement of the menu on the display can be tied to the selection; accordingly the arrangement of the menu (as explained above) can be changed as a feedback. The system may be configured so that the central computer can follow movement of the end-point computers in addition to their location, to determine whether the end-point computer has passes hands or is being used for a purpose that should affect the presentation of the menu on the display.

The data collected may allow analysis of the selections, for example the value (monetary or other type of value) of the selected items from the specific location. This analysis may include calculating the average value of the order by each user, for example; the averages may be compared from various locations and the comparison may serve for adjustments of the arrangements. The adjustments may be manual or the system may be self-learning.

It is important to stress that the different arrangements always involve unique arrangement of the menus on the display: particular items or categories may be highlighted or otherwise prominently featured, a page providing detailed

information is featured etc, and the items/categories may be the first to be displayed.

For example, a client at a restaurant may select a red wine subcategory and the display shows a particular red wine on the screen that was a favourite for other users with similar perusal parameters or even the favourite of the same user in previous sessions, before presenting the other red wine makes.

The computer system is for example a mainframe computer and a plurality of endpoint computers (e.g. tablets having a touchscreen) connected thereto; the connection may be wireless and bi-directional, i.e. data can flow either way, with the variables and arrangements stored in dedicated memory at the mainframe computer and also at the endpoint computers. The display is for example the screens of the endpoint computers (e.g. tablets).

Figure 1 is a schematic general description of the computer system, with the direction of arrows indicating the direction of data flow. A mainframe or central computer system 10 is connected to endpoint computers 20, 30, 40, 50, 60, 70, 80, 90 that display interactive menus (not shown).

Figure 2 is a schematic general description of interactive menus according to one aspect, shown merely as an example for restaurant menus. The scheme shows a system 101 that includes various inputs, which are any one or more of inputs 120, 120', 130, 130', 160, 160', 140, 150, and any one of outputs 110, 110' or 110''.

The central computer system 10 may collect data on perusal and/or selection of items from the endpoint computers, optionally together with identification of the source of the date (i.e. which values were obtained from which end-point computer)

The menu is for example a virtual food menu; the items are representations of food groups, e.g. wine, main course, salad etc., and/or individual items, e.g. orange juice.

The items may comprise a representative image, a textual description, a quick response code (QR) etc. holographic food pictures etc.

Each endpoint computer (e.g. tablet) in the system may have a menu arranged in a default arrangement (hereby explained); the default menus may be identical in all the endpoint computers, or may differ according to environmental conditions and/or perusal (and/or the user's profile according to various attributes, not only the perusal) of each endpoint computer; for example menus displayed on tables in a secluded area of a restaurant (seclusion detectable by tablet sensors, for instance by low-noise and/or dim lighting) may have a default arrangement menu in which wines are displayed at the top of the display; cold areas may have tablets in which soup and hot drinks are most prominently displayed.

Alternatively or in addition, the menus may be displayed in a different order on the tablet according to perusal of the tablet, either the same items are rearranged, or items from various pages (or in scroll-downs to items that were off-screen) are presented together on the screen.

The perusal includes operations such as scrolling up and down (and swiping across in touchscreens of tablets), expanding and contracting groups and other items, traversing information linked to the items (including on the internet), hovering over items, raising and/or tilting the tablet when reviewing certain items (this expressing interest in these items) and so forth. Each operation has a variable associated with it, and the variable assumes a value (stored at the memory of the endpoint computer) according to the perusal.

For example, a first item may have multiple variables associated thereto; expansion of the item may confer a value of 1 or "true" on variable A1; a hovering (dwelling) on the same item for 2 minutes may confer a value of 120 (seconds) on variable B1. The second item is not expanded, leading to a value of "false" to variable A2; dwelling

time on the second item is 3 minutes, leading to a value of 180 to variable B2, and so forth.

In some embodiments the end-point computer has a gesture-sensitive screen that obviates the need to touch the screen. Such screens can be very useful in locations and uses for locations such as hospitals, restaurants etc, where a large amount of users are utilizing the end-point computer and hygiene is very important.

At certain times after the perusal is commenced, the endpoint computer (or a mainframe computer connected thereto etc.) processes the variables and compares their values in non-default arrangements(wherein some of the items are prominently displayed). Each arrangement has its own values of A1, A2, B1, B2, etc.

When a match is found, the menu is redisplayed on the screen in a different arrangement; for example, the items which were dwelt on the most time are now displayed in strategic places on the screen, typically at the top, bottom and sometimes in the middle or sides. Similarly, the items may be flashed or otherwise highlighted on the screen. The match may not be identical, for example a difference of less than 10% between the value attributed to a dwelling time variable B1 and the corresponding value reserved for B1 in an alternative arrangement may suffice to constitute a match. Moreover, there may be a match for A1 but no match for A2; or no match for B1; and so forth, in which case an alternative arrangement is searched for that may provide the appropriate match. Should no appropriate match be found, the default arrangement may continue to be displayed.

Typically, an item in a prominent place such as at the top of the screen has associated thereto a rather high dwelling time, so that the item is predisposed to remain at this position. In order to replace that item, another item's dwelling –time variable would have to acquire an even higher dwelling time value.

Similar systems and methods can be envisioned that work along the same principles.

The menu is typically presented with links from each sub-category to the parent category and to the top of the category..

In some embodiments, the priority (of displayed items) is a function of both the default arrangement and the values obtained from the perusing.

In some embodiments, if the perusal is ceased for a certain predetermined period, the display is reverted to the default arrangement. This period may typically be less than the time in between processings of the perusal data. Alternatively, processing may be delayed until further perusing commences or recommences; periods of inactivity beyond a predetermined period may be ignored.

A frequency of perusing a particular item may also be followed and used in selecting the alternative arrangement. If a frequency counter overflows, all counters may be adjusted by dividing the values in the frequency counters by a given number.

The system thus monitors the user's selection habits and presents the menu items in a sequence customized to the particular user.

The predetermined values may be factory set or reset by a user initialed operation.

According to another aspect, a method and corresponding system are provided comprising:

- Continuous or multiple collections of data from an endpoint computer, indicative of perusal of a provided menu during a session, i.e. of inputs related to perusal of a provided graphic menu. Preferably, the endpoint computer includes a touch screen and the menu is displayed on the screen. The computer is thus for example a tablet. Data collection may include measurement of the speed of scrolling between menu items, rate of touches in the menu per second, expansion of an item (full-screen presentation for example), switching between menu pages, time spent on a particular item, times an item (or page of items) is

summoned, is the endpoint computer laid on the table or rather held at an unstable angle (which indicates that the tablet is being held by hand) or moved short distances (0.5-1m, indicating an extended perusal by a group of users), etc. Contemporary tablets are capable of measuring such data and more, thus indicating the user's perusal actions.

- A session may be defined as a period within which the menu is displayed, for example the tablet may be closed at the end of a session to indicate the end of a first session and the tablet may be reopened to signal the beginning of a second session. Alternatively, positioning sensors (e.g. GPS), a Bluetooth transceiver (that may connect to a different station at each location) etc., in or operationally attached to the device, may serve to indicate whether the device is at a pre-designated distribution station (a non-perusal position) or outside the station (perusal position). When the devices are very close to each other, i.e. about 40cm or even less distance from each other, the system may determine that those adjacent devices are in a non perusal position.
- According to values of the perusal data, for the various parameters, a rearranged menu is displayed. For instance, the menu may first display on a screen a variety of items, each belonging to a different group of items. Based on the perusal values, the group upon which the highest values (or scores attributed to best values) of perusal were obtained may be solely or more preferentially presented on the screen. For example, a fast perusal may lead to a more restricted display, and/or fewer items on the screen.
- The perusal parameters may be numerous, and each parameter may be associated with a predetermined weight so that certain perusal parameters are more or less dominant in determination of the operations to be performed based on the analysis of the data. Typically, perusal of records associated with a particular item, for example for providing more details about the displayed and selected item, will have a high weight. Typically, a polynomial equation will

be calculated for each of the items and the item/s receiving the highest weighed score will be targeted.

- The items in the menu may have associated records comprising values. In some embodiments, presentation of the selected group of items (selected by the computer, as explained above, according to the perusal data) is arranged according to said values, for example the item with the highest value in that associated record may be more predominantly presented on the screen, e.g. in the centre/the description of the item in bold face/larger font,with a frame in a different color as background etc.
- In some embodiments, the menus are arranged with the intention of preferential selection by users of certain items, according to values of certain type associated with the items. It should be realized that the items may deliberately by presented not in the same arrangement as of said values, but rather the relative position of the items is selected to induce selection of the item with the highest value, and if not then selection of the item of second highest value and so forth.

  For example, in one embodiment, the top item on the display has the highest value, other items in the group are displayed below, and the bottom item is the item with the second highest value in the group. It is stressed that some groups of items may not be presented in such a way while others are.
- The system may be self-learning: for example, a final selection of an item, before closure of the session, may be compared to the item which was highlighted as described above, and accordingly may replace the highlighted item, or on the contrary, removed from the displayed group (though not necessarily physically deleted from the memory allocated for the group), the action predetermined according to pre-programming; the replacement or discard may be determined according to comparison of values in records associated with each item, i.e. a difference above a predetermined value may

lead to one action or another. A processor in the computer having the touch screen may perform these calculations, and/or the computer and similarly arranged computers may be connected to a central computer that directs the self-learning.

- Some of the menus may be locally managed, e.g. by a tablet on which a menu is installed and used, and some of the menus may be managed by a server, which may be locally situated (up to several meters from the tablet, for example) or remotely situated. The remotely situated server may simultaneously serve a number of locations, wherein at each location there is a group of devices upon which menus are installed. In some embodiments a part of the menu is locally managed by the device/local server and another part is remotely managed. The weights and values associated with each item on the menu may be provided and independently processed in each device, for example in software installed therein, or may be provided by the server.

Typically, the menu is divided into groups of items. A particular arrangement of perusal of the groups in the menu may be preset in the system. Deviation of the perusal may alert the system to a particular interest of the user in a certain group/s, following which the presentation of the items in the group/s of interest may be rearranged while the perusal is still in progress, i.e., according to values in fields each associated with an item in the group. Alternatively, perusal according to the preset arrangement may lead to presentation of the items in a descending arrangement of popularity determined by previous sessions (e.g. before the tablet was brought to the user/s, according to the final selection by the users of the item, etc). Skipping of a group of items that is ordinarily perused may lead to the system highlighting one or a reduced number of items from the skipped group, wherein the items in the reduced presentation are typically the most popular in that group, as determined by previous sessions.

Prioritization of the groups may be adjusted by various data continuously or periodically collected by the system. For example, a thermometer and/or barometer may be measured, a low temperature may determine prioritization of presentation of soups, coats, mufflers, heating systems and other suitable groups, and more active perusal of such groups and items would be analyzed as normal and thus the presentation of items in these groups may be presented according to the relative popularity of the items.

The groups of items may be interconnected in the following manner: selection of items from a particular first group may be typically associated with selection of items from a particular second group. This association may be determined from statistical analysis of perusal/selection data from previous sessions on the same device/ group of devices at a particular location or from various locations. Thus the groups may be sequentially presented according to the last perused or selected group. Moreover, particular items from a first group may also be in particular associated with a second group or even particular items in a second group, and similarly the presentation will appropriately be dynamically adjusted.

Some embodiments further comprise an imaging system, for example a camera operationally connected to, or incorporated in, the tablet; the imaging system analyses features of the user and categorizes the user as belonging to a predetermined type associated with a pre-designated presentation of the menu, for example identification of a woman leading to presentation of women's clothing. Other features may be detected or input to determine the most appropriate arrangement.

Furthermore, biometric data (e.g. a fingerprint) characterizing the user may be stored together with the user's perusal data to quickly adjust the presentation of the menu at future sessions. The user may present for example a personalized QR to the tablet, which thus retrieves and/or uploads the user's preferences.

Presentation of the menu may further be affected by other parameters in the environment surrounding the device, such as noise levels. A noise above a predetermined level may be set to change the presentation arrangement of the menu (including the highlighting of particular items).The imaging system may also analyze features of the surroundings, for example lighting in the vicinity of the device; for example, subdued lighting at a restaurant may automatically lead to presentation of a wine list in the menu first.

Typically, when the device is moved between users for further perusal within the group of users, the movement is up to 120 cm. The movement may also involve rotational movement which can be detected by a built-in gyroscope. Typically, the system is configured to allow determining from the motion sensors the amount and type of movement of the device, this determination may lead to adjustments of the presentation of the menu. For example, a first user may peruse a restaurant menu displayed on the screen of a tablet and then pass the tablet to a second user at the table of the first user. If the first user was last perusing a wine list, the display will not change, and the second user will see the same wine list. However, should the last perused item be a more personal item (e.g. main portion), the display may be reset for the second user to the initial presentation of the menu.

Typically, dwelling on certain items and groups comprises clicking or tapping an item or group on the screen; allowing a particular item to be most prominently featured on the screen for over 2 seconds for example until replaced by a different item. The popularity of an item may be determined, in addition to its final selection, to the overall amount of dwellings on it. The system normalizes the popularity to the position of the item in the default menu as the first items are inherently more popular merely by their position. The normalization may include comparing the average amount of clicks/taps/expansions items on a first (or second etc.) page get, to the

overall average amount of clicks items get, and detracting the difference in counting the amount of clicks an item gets.

An embodiment system includes devices such as iPads that periodically or continuously provide menu perusal/selection information from devices, to servers covering predesignated geographical regions, to determine popularity of items in a menu. The menus in that region will then list items arranged according to the determined popularity.

Furthermore, information such as popularity of the items may be periodically or continuously scanned and analyzed from external sources, such as from online social networks, and then imported into the devices/servers to affect the menus displayed by the devices.

As used herein, the term "computer" may include any processor-based or microprocessor-based system including systems using microcontrollers, reduced instruction set computers (RISC), application specific integrated circuits (ASICs), logic circuits, and any other circuit or processor capable of executing the functions described herein. The above examples are exemplary only, and are thus not intended to limit in any way the definition and/or meaning of the term "computer".

CLAIMS

1. A method for dynamically arranging display of a computerized menu that comprises items, the method comprising:

providing at least one computer system and a display operationally connected thereto;

providing the computer system with the computerized menu, perusal variables, a default arrangement and at least a first set of alternative arrangements, wherein each alternative arrangement comprises reference perusal values, each reference perusal value being associated with one of said perusal variables;

displaying the menu on the display in the default arrangement;

perusing items on the displayed menu;

assigning perusal values to the perusal variables according to the perusal;

redisplaying the menu on the display in a first alternative arrangement, if there is a match of the perusal values and the reference perusal values of the first alternative arrangement, and if there is no match thereof, redisplaying the menu on the display in the default arrangement.

2. The method of claim 1, further comprising:

further providing the computer system with environmental variables and at least a second set of alternative arrangements, wherein each alternative arrangement comprises environment reference values, each environmental reference value being associated with one of said environmental variables;

providing environmentally-sensitive sensors operationally connected to the computer system and in the vicinity of the screen;

measuring the environment ;

assigning environment values to the environment variables according to the environment measurements;

redisplaying the menu on the display in a second alternative arrangement if there is a match of the environmental reference values in the second alternative arrangement and the environmental values.

3. The method of claim 2, wherein if there is no match thereof, redisplaying the menu on the display in the default arrangement.
4. The method of claim 2, wherein at least part of the first set of alternative arrangements and the second set of alternative arrangements overlap, such that the computer system comprises a third set of alternative rearrangements, wherein each third alternative arrangement comprises both environment reference values and perusal reference values.
5. The method of any one of claims 1 to 4, further comprising:

starting a session of perusing the menu on the screen;

terminating a session of perusing the menu on the screen;

subsequent to terminating the session displaying the menu on the display in the default arrangement.

6. The method of any one of claims 1 to 4, further comprising replacing the default arrangement with the first, second or a third alternative arrangement, as the default arrangement.
7. The method of claim 5, further comprising temporarily replacing the default arrangement with the first, second or a third alternative arrangement, as a default arrangement, until the session of perusing is terminated.
8. The method of claim 5, wherein the computer system comprises a group of computers, and wherein the perusing is performed on a first computer from said group of computers, and the terminating of a session of perusing the menu occurs when the first computer is positioned adjacent to a second computer from said group of computers.
9. The method of claim 5, wherein the perusing is performed on a computer having a lid, and the terminating of a session of perusing the menu occurs when the lid is closed.
10. The method of any one of claims 1 to 4, wherein the perusing is performed on a portable computer, and redisplaying the menu on the display is set to the default arrangement if the portable computer is moved between 40 and 120 cm.

11. The method of claim of any one of claims 1 to 4, wherein the perusing is performed on a portable computer, and redisplaying the menu on the display is set to a fourth alternative arrangement selected according to the first, second or third alternative arrangement.
12. The method of claim of any one of claims 1 to 4, wherein the perusing is selected from one or more of a group of parameters consisting of: scrolling through items presented on the screen, scrolling through groups of items in the menu, marking items, hiding items, expanding displayed menu items, wherein the variables represent the parameters.
13. The method of claim 12, wherein multiple variables represent each parameter.
14. The method of claim 12, further comprising assigning real or Boolean perusal values to the perusal variables.
15. The method of claim 12, wherein the display is selected from a group consisting of a touch screen and a gesture-sensitive screen.
16. The method of claim 12, further providing the computer system with a weight for each displayed item, and assigning perusal values calculated from quotients of the weights and values attributed to the variables according to the perusal parameters.
17. The method of any one of claims 1 to 4, wherein redisplaying the menu on the display in a first alternative arrangement comprises highlighting a first set of

menu items on the display, and wherein each alternative arrangement is associated with a unique set of menu items assigned to be highlighted.

18. In an information display device having a menu with a plurality of menu items, a method of providing for selection by a user of at least one of the plurality of menu items comprises the steps of:

monitoring selection by the user of the plurality of menu items: assigning an adaptive priority to each of the plurality of menu items in response to said step of monitoring, said adaptive priority ranging from at least one highest priority menu item to at least one lowest priority menu item, assigning a predetermined default priority to each menu item, said step of monitoring further comprises the step of determining length of time dwelt on each selected item;

said step of assigning an adaptive priority further comprises the step of assigning priority to each of the plurality of menu items in response to length of dwelt time,

wherein the highest priority menu items are assigned in response to longest dwelling time and the lowest priority menu items are selected in response to shortest dwelling time.

19. The method of claim 18, wherein the display device has a screen, and the menu items having substantially highest dwelling times are positioned at predetermined priority positions on the screen.

20. The method of claim 18, wherein the priority positions comprise the edges of the screen.

21. The method of claim 18, wherein said step of monitoring further comprises the step of determining the frequency of selecting each menu item, and said step of assigning an adaptive priority further comprises the step of assigning priority to each of the plurality of menu items in response to the frequency of selecting each menu item.

22. The method of claim 19, wherein:

the display device has a screen;

a first predetermined weight is assigned to each menu item according to the frequency of selection thereof and a second predetermined weight is assigned to each item according to the dwelling time thereon;

a third weight is assigned to each item according to a predetermined polynomial performed on the assigned first and second weights,

wherein the items having the highest third weights are positioned at predetermined priority positions on the screen.

23. The method of claim 22, wherein the priority positions comprise the edges of the screen.

24. The method of any one of claims 18 to 23, wherein the highest priority items are highlighted on the display device.

25. A computer system configured to allow performing the method in any one of claims 1 to 4.

26. An information display device configured to allow performing the method in any one of claims 18 to 23.

27. The method of claim 1, further comprising:

further providing the computer system with biometric variables and at least a fourth set of alternative arrangements, wherein each alternative arrangement comprises biometric reference values, each biometric reference value being associated with one of said biometric variables;

providing biometrically-sensitive sensors operationally connected to the computer system and in the vicinity of the screen;

measuring the environment ;

assigning biometric values to the biometric variables according to the biometric measurements;

redisplaying the menu on the display in a fourth alternative arrangement if there is a match of the biometric reference values in the fourth alternative arrangement and the biometric values.

28. The method of claim 1, further comprising:

further providing the computer system with biometric variables and at least a fourth set of alternative arrangements, wherein each alternative arrangement comprises biometric reference values, each biometric reference value being associated with one of said biometric variables;

providing the computer system with means allowing the computer system to receive biometric data and convert the biometric data into biometric values;

assigning the biometric values representing received biometric data to the biometric variables;

redisplaying the menu on the display in a fourth alternative arrangement if there is a match of the biometric reference values in the fourth alternative arrangement and the biometric values.

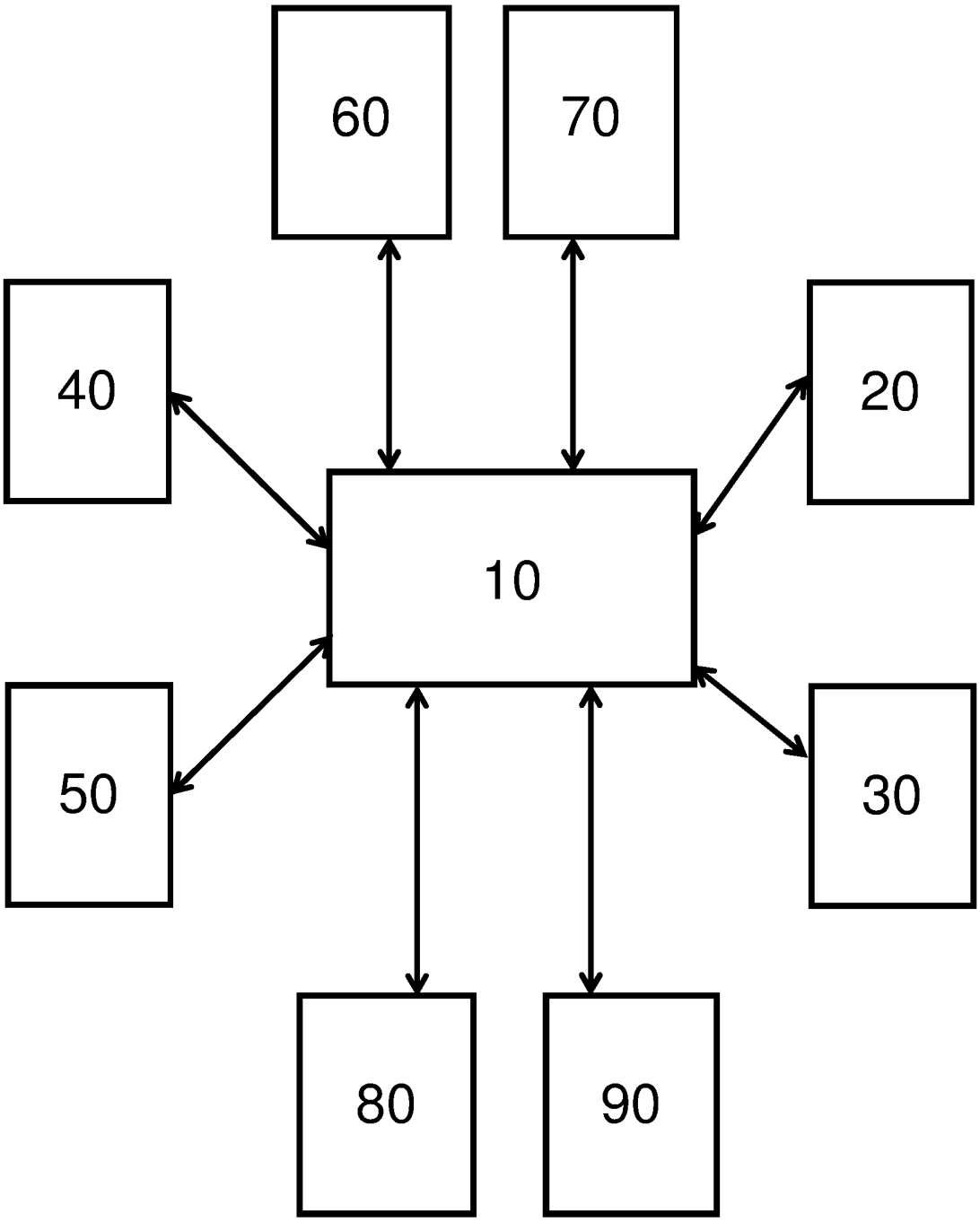

Fig. 1

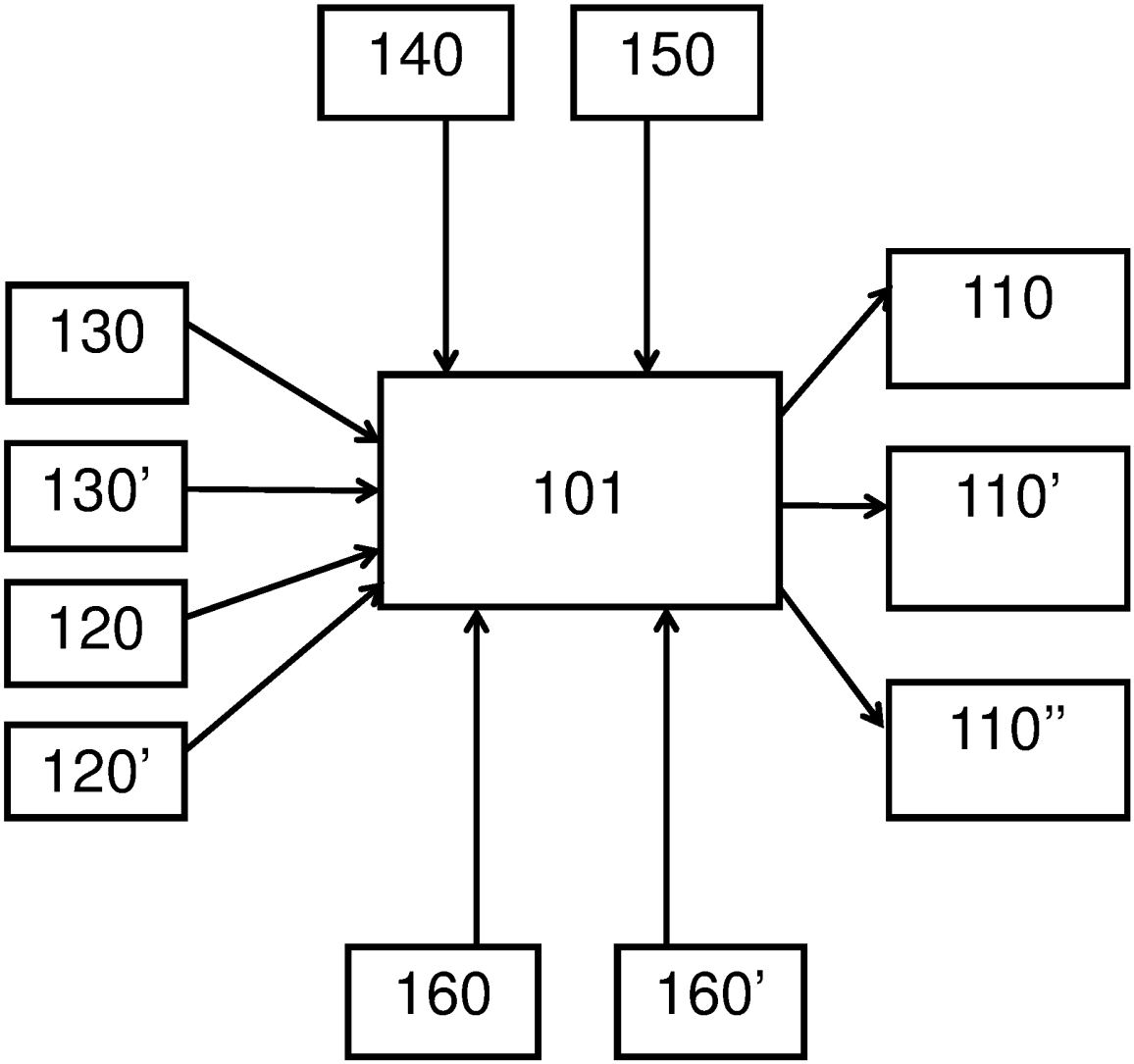

Fig. 2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2014/050188

A. CLASSIFICATION OF SUBJECT MATTER
IPC (2014.01) G06F 3/01

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 (2014.01) G06F 3/01

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)
Databases consulted: THOMSON INNOVATION, Google Patents
Search terms used: order* ,modif* ,chang* ,match* , choos*, layout, dynamic menus, database, associated, scrol*, gesture*, restaurant

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011173571 A1 NEMATOLLAHI MAHANI ET AL. 14 Jul 2011 (2011/07/14) The whole document	1,3,5-9,11-14,16-26
Y	The whole document	2,4,10,15,27,28
Y	US 2009309748 A1 Elgort et al. 17 Dec 2009 (2009/12/17) The whole document	2,4,10,15
Y	US 2011040655 A1 Hendrickson 17 Feb 2011 (2011/02/17) The whole document	27,28

☐ Further documents are listed in the continuation of Box C. ☒ 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
23 Jun 2014	24 Jun 2014
Name and mailing address of the ISA: Israel Patent Office Technology Park, Bldg.5, Malcha, Jerusalem, 9695101, Israel Facsimile No. 972-2-5651616	Authorized officer GORBUNOVA Yelena Telephone No. 972-2-5651669

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IL2014/050188

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IL2014/050188

Patent document cited search report	Publication date	Patent family member(s)	Publication Date
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		US 8583511 B2	12 Nov 2013
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