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Patent Description

Patent Number: 6,928,433
Title: Automatic hierarchical categorization of music by metadata
Assignee: Creative Technology, LTD
Issue Date: August 9, 2005
Filing Date: January 5, 2001
Priority Date: January 5, 2001
Number of Independent Claims: 1

Claim 1

1. A method of selecting at least one track from a plurality of tracks stored in a computer-readable medium of a portable media player configured to present sequentially a first, second, and third display screen on the display of the media player, the plurality of tracks accessed according to a hierarchy, the hierarchy having a plurality of categories, subcategories, and items respectively in a first, second, and third level of the hierarchy[1], the method comprising: selecting a category in the first display screen of the portable media player; displaying the subcategories belonging to the selected category in a listing presented in the second display screen; selecting a subcategory in the second display screen; displaying the items belonging to the selected subcategory in a listing presented in the third display screen[2]; and

[1] One aspect of the invention includes an overlapping hierarchy of categories. Categories include items that can also be included in other categories so that the categories "overlap" with each other. Thus, a song title can be accessed in multiple different ways by starting with different categories. For example, a preferred embodiment of the invention uses the top-level categories "Albums", "Artists", "Genres" (or styles), and "Play Lists". Within the Albums category are names of different albums of songs stored in the device. Within each album are the album tracks, or songs, associated with that album. Similarly, the Artists category includes names of artists which are, in turn, associated with their albums and songs. The Genre category includes types of categories of music such as "Rock", "Hip Hop", "Rap", "Easy Listening", etc. Within these sub-categories are found associated songs. Finally, the "Play Lists" category includes collections of albums and/or songs which are typically defined by the user.
[2] FIG. 10 illustrates a sequence of display screens describing how to navigate to lower levels.

In FIG. 10, library category screen 150 shows the display as it appears when the user depresses library button 116 of FIG. 9. A preferred embodiment of the device uses 4 first-level categories. These are "Albums", "Artists," "Styles" and "Play Lists". Each of these categories can "contain," or be associated with, other categories, songs, or items.

accessing at least one track based on a selection made in one of the display screens[3] [4].

Search Description

Listed below are the results for a search within the database of United States Patents and Patent Applications, with a priority date prior to January 5, 2001. The focus is on patents or patent applications that disclose the following key area(s) of novelty:

1) A method of selecting at least one track from a plurality of tracks stored in a computer-readable medium of a portable media player configured to present sequentially a first, second, and third display screen on the display of the media player, the plurality of tracks accessed according to a hierarchy, the hierarchy having a plurality of categories, subcategories, and items respectively in a first, second, and third level of the hierarchy;

2) Accessing at least one track based on a selection made in one of the display screens.

The invention is suitable for use with a limited display area and small number of controls to allow a user to efficiently and intuitively navigate among, and select, songs to be played. By using the invention, very large numbers of songs can be easily accessed and played.

One aspect of the invention includes an overlapping hierarchy of categories, thus categories include items that can also be included in other categories so that the categories "overlap" with each other. A song title can be accessed in multiple different ways by starting with different categories. For example, a preferred embodiment of the invention uses the top-level categories "Albums", "Artists", "Genres" (or styles), and "Play Lists". Within the Albums category are names of different albums of songs stored in the device. Within each album are the album tracks, or songs, associated with that album. Similarly, the Artists category includes names of artists which are, in turn, associated with their albums and songs. The Genre category includes types of categories of music such as "Rock", "Hip Hop", "Rap", "Easy Listening", etc. Within these sub-categories are found associated songs. Finally, the "Play Lists" category includes collections of albums and/or songs which are typically defined by the user.

Advantageous use is made of the overlapping hierarchy to allow the user to quickly designate a song for playback... the user can open and queue both albums and songs with predictable results.

Note that in library category screen 150 ALBUMS is currently highlighted. By depressing soft button 112 of FIG. 9, the "open" command is performed on the highlighted category…Lists screen 154 is displayed as a result of a user opening Album category of library category screen 150. Lists screen 154 shows items within the Albums category such as commercial albums of multiple songs from a record label, pre-made lists or collections created by a user, or other predefined lists or collections of songs or recordings.

In FIG. 10, lists screen 154 shows each item as a list of songs. This is shown visually by the icon to the left of each item which depicts a miniature list. Possible soft button commands are "Close", "Open" and "Queue"... If the user selects the Close command, the display reverts to library category screen 150. If the user selects the Open command, the display shows tracks screen.

[3] Referring to Claim 6, "The method of selecting a track as recited in claim 1 wherein the accessing at least one track comprises one of playing or adding to a playlist at least one track associated with a selected one of the category, subcategory, and item."

[4] The user can select the Queue command to instruct the device to place all the songs from the selected (i.e., highlighted) list into the play list for eventual playback. Yet another option allows the user to press play button 122 of FIG. 9 to cause any currently-selected songs or a list of songs (e.g., an album) to immediately be played.

According to another aspect of the invention, the hierarchy is displayed on the portable music player so that a user can traverse the organizational hierarchy to find individual tracks or find playlists composed of logical groups of tracks.

Search Results

United States Patent Application: 20020075312
Assignee: MICROSOFT CORPORATION
Filing Date: April 11, 2001
Priority Date: April 21, 2000 - 60198975, United States (US)

ABSTRACT

A new way of providing pertinent information about an item (e.g., a text file, a picture file, a music file, video file, or any other similar file) is provided. The invention provides graphical information about the item along with user-selectable properties that are specific to that item. The invention further provides a way of sorting the items by the user-selectable properties and communicating the sort order to the user. The invention thereby provides the user with a way of quickly finding pertinent information about the item.

SPECIFICATION CITATIONS

"For a folder containing music in WAV (wave), MIDI, MP3, or similar music formats, the properties that may be displayed include name, size, type, artist, year, album, track, length, or any other suitable property that would identify a music file."

PATENTAPPLICATION CLAIMS

I. A method of providing a graphical user interface to an operating system of a computer having a video screen, comprising the steps of- a. providing an operating system user interface manipulable by a user, b. providing a frame controlled by the operating system, the frame including a graphical representation of an item and at least one slot containing a user selected property of the item, and C. displaying a view of the frame on the video screen.

10. A computer-readable medium having computer-executable instructions for performing steps comprising: a. a database component for storing properties of an item that are specific to the item, b. a first control component for providing a graphic user interface on a video screen, c. a second control component for displaying the properties of the item on the video screen, d. a user interface component manipulable by a user for requesting the display of the properties of the item on the video screen, and e. if the request to display the properties of the item on the video screen is received from the user: i. the first control component retrieving the stored properties from the database component and sending the properties to the second control component, and ii. the second control component displaying the properties dynamically in a frame on the video screen.

13. In a computer system having a graphical user interface including a display and a user interface selection device, a method of selecting from a menu and providing specific properties about an item, comprising the steps of a. displaying a set of menu entries including a tile menu entry, b. receiving a first menu entry execution signal indicative of the user interface selection device pointing at the tile menu entry on the display, c. displaying an arrange item menu entry including a set of cascade menu items associated therewith, d. receiving a menu entry selection signal indicative of the user interface selection device pointing at the arrange item menu entry on the display, e. in response to the selection signal, displaying the cascade menu items, f. receiving a second menu entry execution signal indicative of the user interface selection device pointing at one of the cascade menu items associated with the arrange item menu entry, g. in response to the first and second execution signals, retrieving from a default directory the specific properties of the item, and h. displaying dynamically the properties of the item that are specific to that item in a tile format on the display, and i. arranging the properties of the item on the display based on the selected one of the cascade menu items.

United States Patent Application: 20020075312
Assignee: MICROSOFT CORPORATION
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14. The method of claim 13 wherein the tile format is a user interface display which includes an icon and at least one row of item properties located adjacent to the icon.

16. The method of claim 13 further comprising the steps of a. receiving a third menu entry execution signal indicative of the user interface selection device pointing at the icon, and b. in response to the third execution signal, opening the item represented by the icon.

18. The method of claim 13 wherein the item is a music file.

U.S. Patent Number: 6,201,176
Assignee: Canon Kabushiki Kaisha
Filing Date: April 21, 1999
Priority Date: May 7, 1998 - PP3405, Australia

ABSTRACT

A system and method for querying a music database, the database containing a plurality of indexed pieces of music**,** where the query is performed by forming a database request consisting of a conditional expression relating to the name and/or attributes of the desired piece of music**.** Associated features are derived from the database query, and compared with corresponding features for the other pieces of music in the database. A desired piece of music is determined by searching for a minimum distance between the database query features and those associated with the pieces of music in the database.

SPECIFICATION CITATIONS

"When considering audio signals in general, and in particular those relating to music, the nature of the signals may be considered in terms of various attributes which are intuitively meaningful. These attributes include, among others, tempo, loudness, pitch and timbre. Timbre can be considered to be made up of a number of constituent sub-features including "sharpness" and "percussivity". These features can be extracted from music and are useful in characterizing the music for a classification scheme." Column 1, Line 35.

'176 PATENT CLAIMS

1.A method for querying a music database, which contains a plurality of pieces of music**,** the method comprising steps of: classifying, using feature extraction on said plurality of pieces of music using steps of: (i) segmenting each piece of music into a plurality of windows; (ii) extracting at least one characteristic feature in each of said windows; and (iii) indexing said each piece of music dependent upon extracted features; forming a request which specifies (i) at least one of a name of a piece of music and features characterizing the piece of music**,** and (ii) at least one conditional expression; comparing the features characterizing the specified piece of music to corresponding features characterizing other pieces of music in the database; calculating corresponding distances between the specified piece of music and the other pieces of music based on comparisons; and identifying pieces of music which are at distances from the specified piece of music which satisfy the at least one conditional expression.

22. An apparatus according to claim 20, wherein the distance determination means comprises: first distance determination means for calculating corresponding distances based on a first relationship between (i) a loudness, a percussivity, and a sharpness of the specified piece of music**,** and (ii) a loudness, a percussivity, and a sharpness of each other piece of music**;** and a sorting means for sorting, on the basis of a second relationship between (i) a tempo of the specified piece of music**,** and (ii) a tempo of each other piece of music**.**

U.S. Patent Number: 6,201,176
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23. An apparatus according to claim 20, further comprising a means for clustering the pieces of music in the database into classes.

38. A computer readable memory medium for storing a program for apparatus for querying a music database which contains a plurality of pieces of music**,** said program comprising: code for a classifying step for classifying, using feature extraction on said plurality of pieces of music**,** said code for said classifying step comprising: (i) code for a segmenting step for segmenting each piece of music into a plurality of windows; (ii) code for an extracting step for extracting at least one characteristic feature in each of said windows; and (iii) code for an indexing step for indexing said each piece of music dependent upon extracted features; code for a forming step for forming a request which specifies (i) at least one of a name of a piece of music and features characterizing the piece of music**,** and (ii) at least one conditional expression; code for a comparing step for comparing the features characterizing the specified piece of music to corresponding features characterizing other pieces of music in the database; code for a calculating step for calculating corresponding distances between the specified piece of music and the other pieces of music based on comparisons; and code for an identifying step for identifying pieces of music which are at distances from the specified piece of music which satisfy the at least one conditional expression.

PATENT COOPERATION TREATY APPLICATION:0054187
Assignee: Rock.Com, Inc.
Filing Date: March 8, 2000
Priority Date: March 8, 1999 - 60123520, United States (US)

ABSTRACT

A universal music player system includes a virtual player which has the appearance and functionality of a real media player. One or more media object displays display media objects which are owned by or accessible to a user. An animator visually emulates loading a media object from the virtual rack onto the virtual media player responsive to a user command. A loader loads a media object file corresponding to the selected media object in response to the user command. A playback activator selects playback software appropriate for the loaded file's format and for activating the selected playback software to play the loaded media object file. Each media object file is represented by an icon which is unrelated to where the media object file is stored. The appearance of icons is independent of where the associated media object files are located. When a user clicks on a media object, the media object is visually loaded by the animator onto a media object holder in the virtual player. After the media object is loaded onto the media object holder, the media object holder closes and the associated media object fie automatically begins to play. A virtual rack holds media objects owned by or accessible to a current user, and displays media objects according to a selected category**.** A data collector collects statistical data about a user's use, including but not limited to, a list of purchased music**,** a list of sampled selections downloaded from a provider, a history of the user's playback of any of media or selections, or a history of selections received via Web radio.

SPECIFICATION CITATIONS

“the universal player allows a user to organize his music at one central location and in a variety of ways. Users can sort and/or categorize their music by genre, title and/or artists as well as create custom playlists or compilations.”

PATENT APPLICATION CLAIMS

43. A universal player, comprising:
a. virtual player which emulates visually and functionally a physical media player-, a media object display in which media objects owned by or accessible to a user are displayed; an animator which

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Assignee: Rock.Com, Inc.
Filing Date: March 8, 2000
Priority Date: March 8, 1999 - 60123520, United States (US)

visually emulates loading a media object from the media object display onto the virtual media player responsive to a user command; a loader which loads a media object file associated with the selected media object, responsive to the user command; and a playback activator which selects playback software appropriate for the loaded file's format and for activating the selected playback software to play the loaded media object file.

45. The universal player of Claim 43, wherein the virtual rack displays media objects according to a selected category.

46. The universal player of Claim 45, wherein the selected category is genre.

47. The universal player of Claim 45, wherein the selected category is artist.

48. The universal player of Claim 45, wherein the selected category is title.

49. The universal player of Claim 45, wherein the selected category is displayed on the virtual rack.

91. A system for displaying, on a processor display, a collection of media, comprising: a media object organizer, wherein dragging a first selection to an empty slot in the media object organizer creates a compilation comprising the first selection, and wherein dragging a subsequent selection to the compilation adds the selection to the second existing compilation.

93. A system for displaying a collection of media as claimed in Claim 91, wherein the collection is sorted by category.

U.S. Patent Number: 6,232,539
Assignee: Looney Productions
Filing Date: October 18, 1999
Priority Date: June 17, 1998

ABSTRACT

A music organizer and entertainment center provides a center having a microprocessor, sound card functions and high-volume data storage and retrieval units for playing back music according to a variety of predetermined categories. Music can be played back in random form or can be played back according to a particular pre-selected order. The categories are provided by service provider who delivers selected titles and/or songs to the end user. The songs are typically loaded using a custom CD-ROM provided from the service provider. The music is provided in data-compressed form and is decompressed and processed through a sound card during playback. The categories can include a variety of parameters such as title, artists, date, speed, dance characteristics, subjective energy level and music style, such as easy-listening, upbeat, etc.

SPECIFICATION CITATIONS

“A significant feature of the center, to be described in greater detail below, is the organization of individual songs or selections according to specific categories… These categories are carried in a database, along with the raw digital music data, and allow the user to playback each of the individual selections based upon specific categories in a random or ordered manner.” Column 6, Line 10.

“The following categories, among others can be used in conjunction with the database program to catalog each individual musical selection-song title, artist, date, main music category, sub-main music category, special music category, sub-music category, music style, dance type, music speed and a subjective music "energy level" determined by the service provider.” Column 6, Line 52.

U.S. Patent Number: 6,232,539
Assignee: Looney Productions
Filing Date: October 18, 1999
Priority Date: June 17, 1998

'539 PATENT CLAIMS

1. A music organizer and entertainment center comprising: a storage device for storing compressed data defining a plurality of individual music selections and associated category flags; a processor that retrieves selections and the associated category flags from the storage device based upon user selection of predetermined of the categories; a data decompressor that translates the compressed data into playable digital music data; a network interface for receiving the compressed data from a remote source over a network for download into the storage device; and a graphical user interface display having a plurality of selectable screens, at least one of the selectable screens including a plurality of category buttons constructed and arranged so that when a predetermined of the category buttons is activated, music selections having category flags matching the predetermined category of a respective of the buttons are selected and listed on the display.

6. The center as set forth in claim **1** wherein at least one of the displays includes a play list of music selections chosen from the search list, the center being constructed and arranged to translate compressed data of each of the music selections on the play list, in a predetermined order, and to convert the playable digital music data into audible music signals.

9. The center as set forth in claim **1** further comprising a display screen having a plurality of graphical user interface displays, at least one of the displays including a plurality of buttons that, when activated, display a list of music selections on a search list having the associated category flags.

10. The center as set forth in claim **9** wherein each of the category buttons is constructed and arranged to display a plurality of sub-category buttons with other associated category flags whereby activation of the sub-category buttons further defines a selection of individual music selections so that the further defined music selections have each of the selected associated category flags.

11. The center as set forth in claim **1** further comprising a graphical user interface having a plurality of display screens, at least one of the screens showing thereon a plurality of buttons associated with individual of the associated category flags, a playback list showing music selections schedule for playback by the center and a search list showing current music selections retrieved based upon predetermined of the category buttons.

14. The center as set forth in claim **1**, wherein one of the categories includes sub-categories.

15. A computer readable medium that contains program instructions for: receiving compressed data representative of a plurality of musical selections from a source; storing the compressed data in a database with a plurality of category markers associated therewith representative of a plurality of predetermined characteristics of each of the musical selections, respectively; selectively accessing predetermined of the plurality of selections and constructing a list of the selections for playback as music based upon at least one of the predetermined characteristics entered by a user; decompressing and playing back each of the predetermined of the plurality of selections according to a desired order of playback; and displaying in a graphical user interface display having a plurality of selectable screens, at least one of the selectable screens including a plurality of category buttons constructed and arrayed so that when a predetermined of the category buttons is activated, music selections having category flags matching the predetermined category of a respective of the buttons are selected and listed on the display.

REST OF REPORT REDACTED.
IN AN ACTUAL VALIDITY SEARCH REPORT, CLIENTS WILL RECEIVE A COMPREHENSIVE SUMMARY OF ALL PATENTS AND PATENT APPLICATIONS MATERIALLY RELEVANT TO THE PATENT AT ISSUE.