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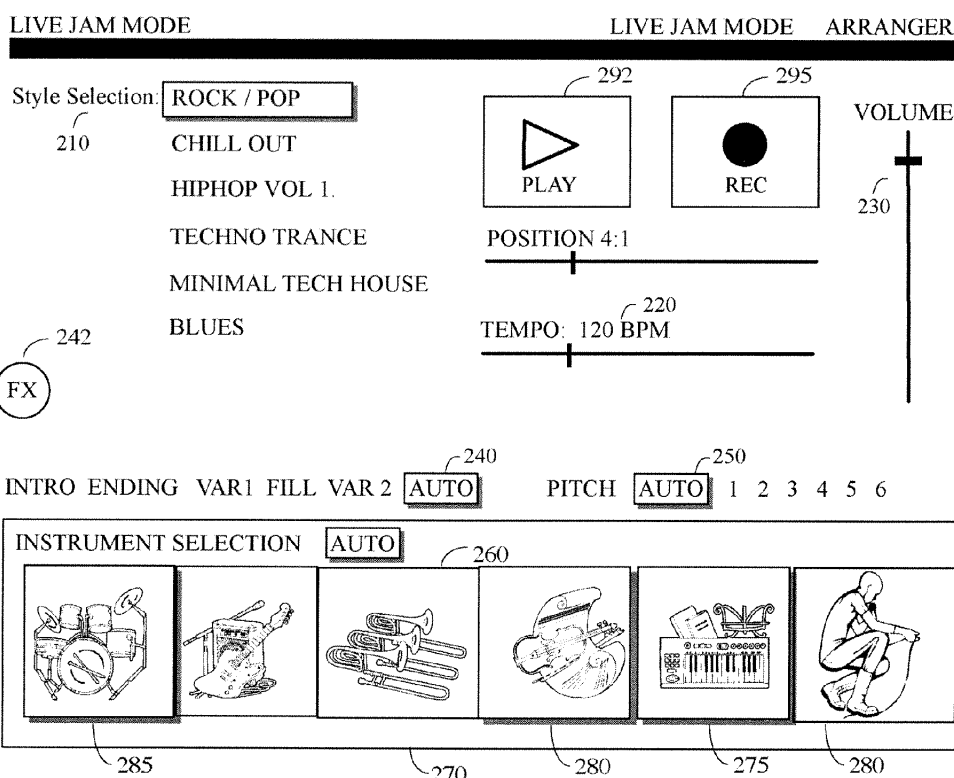
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(54) **Method for implementing an automatic music jam session**

(57) According to a preferred aspect of the invention, there is provided a method for automatic music jam sessions. A user is able to define in real-time a plurality of different settings which are utilized in real time and which provide instant results. In an automatic mode, the invention will pick settings autonomously, for example song part definition, tone pitch and instruments. In absence of

constant user interaction, the invention enters a creative mode wherein the initial user-defined settings are varied to introduce variance into the jam session. The method also monitors data input by instruments connected and played by the user and adapts the setting selection accordingly.

Figure 2



Description

[0001] This application claims the benefit of U.S. Provisional Patent Application serial number 61/577,432 filed on 12/19/2011 and incorporates said provisional application by reference into this document as if fully set out at this point.

FIELD OF THE INVENTION

[0002] The present invention relates generally to the field of multimedia editing and, more generally, to automatically composing musical works with intuitive user interaction.

[0003] The field of music editing and generation has undergone substantial change in recent years. Among the more significant changes is that music generation went from a work intensive and time consuming process of learning to play and master a real instrument to one that based around the use of computerized techniques to generate new music works.

[0004] Despite all the technological advances, computer driven / digital data driven composition has never completely supplanted the traditional way of making music by playing actual instruments. That being said, a number of approaches are available wherein computers and instruments can be used in together to help a user compose music. These approaches, however, are typically very limited in that the user enters music into the computer via an instrument and the computer records the music. The computer may additionally provide, for example, background music or supporting music to accompany the user's performance. This accompaniment, however, once initiated is static or at least always depends on continuous input by the user to change particulars, like the music itself, or the key, rhythm or pitch which prevents the user from concentrating on playing the instrument.

[0005] Thus, what is needed is a system and method that supports a user when generating music, wherein the level of support is adjustable by the user. The level of support should be variable and include approaches such as fully automatic, user driven selection, and real-time automatic accompaniment generation for a user who is playing an instrument. Additionally what is needed is a system and method that smoothly combines the traditional approach to music creation - with instruments - with a computer based music clip driven approach.

[0006] Heretofore, as is well known in the media generating and editing industry, there has been a need for an invention to address and solve the above-described problems. Accordingly it should now be recognized, as was recognized by the present inventors, that there exists, and has existed for some time, a very real need for a system and method that would address and solve the above-described problems.

[0007] Before proceeding to a description of the present invention, however, it should be noted and remembered that the description of the invention which fol-

lows, together with the accompanying drawings, should not be construed as limiting the invention to the examples (or preferred embodiments) shown and described. This is so because those skilled in the art to which the invention pertains will be able to devise other forms of the invention within the ambit of the appended claims.

SUMMARY OF THE INVENTION

[0008] There is provided herein a system and method for implementing an intelligent automatic music jam session preferably with and on a touch based interaction device.

[0009] In a preferred embodiment, the instant invention will provide the user with an option to initiate a jam session with or without the utilization of an instrument that is used as input to the computer. In either case the user will be able to intuitively interact with a graphical user interface to define the specifics of the music jam session.

[0010] In a preferred arrangement, a user will initially and continuously select and initiate options in a graphical user interface preferably via touch interaction. The options may comprise the selection of a specific music style, the definition of a tempo, of volume, the selection of one or a number of instruments, the selection of pitch and also the definition of sections of a musical work. The options provided will allow even a novice user to initiate a jam session. However the instant invention will not be limited to use by a novice, a professional user will be able to select and initiate program options that provide more control and influence during the jam session.

[0011] An embodiment of the instant invention will further allow the user to initiate an intelligent automatic setting for either the individual sections of a music section, for the selection of the tone pitch and for the selection of the instruments or for all of these options together. The selection of automatic settings for the instant invention is called the creative mode, a mode in which the instant invention randomly and continuously picks different music sections, chooses different instruments, and/or changes the melody / tone pitch by itself. Additionally the user will be able to connect an instrument to the computer and initiate a jam session. In such an instance, the instant invention will read and react to the music played by the user and adapt the selection of music sections of the music piece and therewith the selection of individual music clips to the input of the user. Furthermore the instant invention will adapt the selection of tone pitch, tempo, and instruments to the way the user is playing.

[0012] The foregoing has outlined in broad terms the more important features of the invention disclosed herein so that the detailed description that follows may be more clearly understood, and so that the contribution of the instant inventors to the art may be better appreciated. The instant invention is not limited in its application to the details of the construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. Rather the invention is capa-

ble of other embodiments and of being practiced and carried out in various other ways not specifically enumerated herein. Additionally, the disclosure that follows is intended to apply to all alternatives, modifications and equivalents as may be included within the spirit and the scope of the invention as defined by the appended claims. Further, it should be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting, unless the specification specifically so limits the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in which:

Figure 1 depicts a general working environment of the instant invention.

Figure 2 illustrates a preferred graphical user interface of the instant invention.

Figure 3 illustrates a general workflow suitable for use with the instant invention.

Figure 4 depicts a general layout of the data structure of the audio material suitable for use with the instant invention.

Figure 5 illustrates one possible data content of the individual selectable styles of the instant invention.

Figure 6 illustrates one possible data structure and content of the audio loops suitable for use with the instant invention.

Figure 7 contains a more detailed operating logic suitable for use with the instant invention.

Figure 8 illustrates one method by which filter settings might be altered in real time.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] Referring now to the drawings, wherein like reference numerals indicate the same parts throughout the several views, there is provided a preferred system and method for implementing an intelligent automatic music jam session.

[0015] As is generally indicated in Figure 1, at least a portion of the instant invention will be implemented in form of software running on a user's computer 100. Such a computer will have some amount of program memory and hard disc storage (whether internal or accessible via a network) as is conventionally utilized by such units.

Additionally it is possible that an external camera 110 of some sort be utilized with - and will preferably be connectible to - the computer so that video and/or graphic information can be transferred to and from the computer.

5 Preferably the camera 110 will be a digital video camera, although that is not a requirement, as it is contemplated that the user might wish to utilize still images from a digital still camera in the creation of his or her multimedia work. Further given the modern trend toward incorporation of cameras into other electronic components (e.g. in hand-held computers, telephones, laptops, etc.) those of ordinary skill in the art will recognize that the camera might be integrated into the computer or some other electronic device and, thus, might not be a traditional single-purposes video or still camera. Although the camera will preferably be digital in nature, any sort of camera might be used, provided that the proper interfacing between it and the computer is utilized.

[0016] Additionally a microphone 130 might be utilized so that the user can add voice-over narration to a multimedia work or can control his or her computer via voice-recognition software. A CD or DVD burner 120 could be useful for storing content on writable or rewritable media. Additionally it might be possible that a mobile data storage device 140 might be connected to the computer, such as an mp3 player for example, for storage of individual music clips or other data as needed by the instant invention. Furthermore in some embodiments the user would bring a smart phone 150 or other touch based device (e.g., a tablet computer such as a Microsoft® Surface® table or an iPad®, or other device with a touch-sensitive display) into communication with the computer in order to, for example, control the computer or exchange data between the computer and the device.

[0017] According to an embodiment of the instant invention, the user might also be able to connect instruments such as a keyboard 160 to the computer to allow for the input and recording of music data directly from the user.

[0018] The process of the instant invention will provide a user-friendly preferably touch-based graphical user interface via music generation and editing software. The method will preferably utilize MIDI loops or audio clips organized into styles, with these MIDI loops being enhanced with a classification into song parts.

[0019] The loops will also be tagged with data that is then used by the instant invention during the music generation process. These tags represent a classification of the loops - as song parts, pitch and melody qualification. A well organized and tagged database of MIDI loops or audio loops is an essential part of the instant invention. Such a database of MIDI loops or a selection of individual styles referring to the MIDI loops will preferably be provided by the instant inventors.

[0020] The type, layout and interaction possibilities of the graphical user interface will be accessible, in some embodiments, by the user with mouse and keyboard. However, the instant invention will be especially useful

when used in connection with a touch interface, if the device(s) on which the instant invention is executed provide such a possibility.

[0021] The music generation, or jam mode of the instant invention will react to the user interactions and user input in real time, incorporating the users activities into the music generation process. This will give the user instantaneous dynamic feedback and sense of achievement. Each different interaction of the user, the selection of a different tone pitch, the selection and de-selection of a different instrument or the definition of a different song part will be incorporated almost instantly by the instant invention, however in a preferred embodiment only after the next bar is reached.

[0022] The present invention will preferably begin with the initiation by the user of the music generation process - the live jam mode. The live jam mode might be a component part of a general music generation software or it might be a standalone program.

[0023] In an embodiment, the user will be presented with a graphical user interface **200** containing controls for all essential settings. All of these controls will be selectable and changeable by the user at any time both before and during the music generation process, with the selections made by the user being incorporated by the instant invention into the music generation process in real time.

[0024] The user preferably will preferably start with the selection of a music style **210**, a style which will then be used in connection with the created music work as long as it is selected. The user will also be able to define and change the tempo **220** of the music work. A volume control **230** will be provided which will allow the user to change the output volume. In some embodiments, the volume control **230** will affect only the voice that is currently selected in the voice bank **270** (e.g., keyboard **275**), thereby adjusting the volume of the selected voice as compared with the other currently active / selected voices **260**. In other instances, it could be used to control the total audio volume as heard through an attached speaker or headphones. The overall volume setting will generally not be stored by the instant invention during the music generation process (i.e., preferably the setting of the output volume will not effect the volume of the musical work that is subsequently saved), although in some instances it might be tracked in order to adjust the relative volume of one instrument / part with respect to another during playback.

[0025] In addition, in an embodiment there will be a number of controls and settings that allow the user to direct the music generation process, i.e., to influence the live jam mode on a deeper level. The user will preferably be able to define and select individual song parts **240** which can be combined to create a complete song. That is, in some embodiments the user will be able to signal to the instant invention that he or she wants the music that is being created to transition into the next phase, e.g., from the introduction, to the verse. The instant in-

vention will then select and play MIDI or music loops that are compatible with or representative of the selected song section. The instant invention will provide the user with an assortment of different song parts that allow the user to control the song structure. For example, by selecting the "Intro" option the instant invention will incorporate at least one music or MIDI loop that is tagged with the "intro" tag and has a tempo, chord structure, etc., compatible with an introduction. Other possibilities include such parts as verse, chorus, bridge, outro, etc., as those terms are known in the music arts.

[0026] Returning to Figure 2, the instant invention in this embodiment has provided parts labeled "Ending", "VAR1", "Fill" and "VAR2," selection of which will cause the instant program to insert different music or MIDI loops that contain music that adheres to the selected style, and pitch and to the selected song part. For purposes of the instant disclosure, it should be noted that "VAR1" and "VAR2" stand for variations and "Fill" represents music material that is usable as fill material as those terms are known and understood in the art. In an embodiment, the selection of "Ending" will insert a music or MIDI loop that provides an ending to the current music piece, allowing the user to end the generated song in a musically pleasing and/or correct fashion. It should be noted that after the selection of the "VAR1" or "VAR2" song part, the instant invention will preferably cycle through the audio loop material that is available to prevent the same audio loops from being selected for, by way of example, four consecutive bars. The instant invention will preferably do that for all audio loops, including both loops containing melody based instruments as well as loops containing drum and bass audio material.

[0027] For the novice user the selection of the "automatic" option regarding the song part setting **240** will also be possible. In this variation, the instant invention will preferably generate and select the song parts automatically (e.g., intro, verse, chorus, outro, ending) and the user will be provided with a fully rough structured song.

[0028] Additionally, and in some embodiments, the instant invention will provide an effects option **242**. Preferably, when the user selects this on-screen icon an opportunity will be provided to apply, modify, or remove various audio effects (e.g., filters, reverb, flange, etc.).

[0029] In some embodiments, when the user selects the PLAY control **292** the instant invention will automatically start the music generation process. In this example, this will cause the program to utilize the user's selected style, song parts, tone pitch / key and instruments in the generation process. Preferably when the PLAY control **292** is selected, the REC control **295** will be activated too, thereby initiating the recording process. By selecting the REC control **295** again, in some embodiments the user will indicate to the instant invention that the generation and recording of the current music work is to be ended. In this instance, the instant invention will insert a music loop representing an ending in order to complete the music generation process for the current music piece.

[0030] A pitch setting **250** will also be provided in some embodiments. This option will allow the user to select individual tone pitch / note values manually or to select an automatic setting wherein the instant invention will automatically generate tone pitch / note changes accordingly. In an embodiment, the currently selected and active tone pitch will be displayed in the graphical user interface. However it is also preferable that the real key will also be displayed to the user, so that the user who playing along with the instant invention via a connected instrument will be able to play in the correct key. However it is also possible, and within the scope of the instant invention, for the user to ignore the key and play as he sees fit. In that case, the instant invention will preferably select tone pitch / note settings in order to adapt to generated song to the playing of the user, thereby generating a musically pleasing music work. If a specific tone pitch has been selected by the user then the instant invention will generate the music - i.e., it will initiate the jam mode in the selected tone pitch / key as long as it is selected.

[0031] In addition to the already described user controls, in an embodiment the user will also be able to define and select the instruments that are to be used in generating the music. In some embodiments, the graphical user interface will provide an instrument selection bar **260** displays the current voice selection (i.e., the voice bank **270**). In an embodiment the user will be able to select and de-select individual instruments dynamically which changes will be reflected in real time via external speakers, headphones, etc. Preferably, the inclusion / exclusion and change of instruments can be done at any time and without any restrictions, although the instant invention also provides an automatic setting, which when activated, utilizes and automatically selects instruments that are available according to the currently selected style. The instant invention will select / deselect and change these instruments in an alternating fashion to generate a pleasing music work.

[0032] Figure **3** provides a summary of a preferred workflow of the instant invention. In a first preferred step the user will activate the jam mode **300**. Next, and preferably, the user will select a style **310**, the tempo **320**, the tone pitch **330**, the individual song parts **340** and the preferred instruments **350**. However, it should be noted that these settings do not necessarily need to be defined sequentially before the start of the music generation process. They will be selectable and changeable the whole time that the jam mode is active. This will encourage the user to alternate between multiple ones of the available settings **360**. In an embodiment, the instant invention will automatically incorporate the changed settings into the jam mode - the music generation process will be modified dynamically in real time.

[0033] The instant invention will record **370** the generated music while jam mode is active and store it on a computer. The store might be hard disc, a flash based memory device, etc. The recording will then be available for the user for further additional processing if that is de-

sired.

[0034] Figure **4** illustrates a preferred data structure of the instant invention. The instant invention utilizes, in an embodiment, an organized and data structure. This database will be provided in some instances by the instant inventors. In some embodiments, a limited set of styles might be provided initially, with additional styles available on demand and for a fee. Where a user desires additional styles, the order will be initiated by the user, with the new styles being transmitted digitally directly to the user. Of course, it is also possible that the purchased styles might be shipped on a storage medium after purchase. The user's styles could be stored either locally on the user's computer, or remotely and access via a LAN, Wi-Fi, the Internet, etc. Each style will preferably be stored and named internally according to a simple naming scheme. For example, see Style A **400**, where each style has a specific number of audio loops associated with that style. However, each of these loops (audio loop A **405**, audio loop B **410**, and audio loop C **415**) need not be strictly associated with a single style. It is preferable and possible that an audio loop might be associated with multiple different styles (style b **420**).

[0035] Figure 5 depicts a preferred data structure of one of the individual styles **500** of the instant invention. The data record associated with a style **500** will preferably contain information about the number of individual song parts that are available and selectable **510**. Additionally, the number and type of individual instruments **520** that are part of the style will preferably stored in the data structure of each individual style. Each style will preferably have a predefined tempo **530**. However it should be noted that once the user selects the style and interacts with the user controls, the predefined tempo might be changed automatically and/or manually by the user.

[0036] Additionally in some embodiments each style will have a predefined tone pitch **540** or key that can be modified by the user. Further, in an embodiment each style will contain icons **550** and animations **560** that are represent the corresponding instrument and/or the particular style. These pictures and animations will preferably be displayed in the graphical user interface as is generally indicated in Figure 5. In some embodiments, the icons / images will be animated so that the user will be able to see a representation of a musician playing the selected instrument. Another preferred data value that could be stored with each style is the name **570** of that style which will be the name that is displayed in the graphical user interface for selection by the user.

[0037] Figure **6** depicts a preferred data structure for use with the individual audio loops **600**. In this embodiment, the audio loops, in addition to the audio material, might contain information about the styles **610** with which they have been associated. This might be a plurality of styles, or only one style. Furthermore the audio loop has a specific predefined inherent tempo value **620**, which is also stored in the data structure of the audio loop. Additionally information about the usability of the audio loop

as a part **630** (intro, variance 1, variance 2, ending, etc.) in the music generation process will be stored in this data structure.

[0038] Each audio loop will additionally, and preferably, be associated with information regarding the instrument **640** the loop was taken from or created by. In some embodiments, an important value in the data structure of the audio loops will be the information about the harmony suitability **650** or compatibility of each clip with respect to the others. This quantity will indicate, in a general way, whether or not one audio loop is musically compatible with another. The harmony suitability could either be provided by the user and inserted into the data structure, or designed by the creator of the database based on a scale that indicates compatibility with another currently selected audio loop. Additionally it might be possible that the instant invention will determine the harmony suitability by first analyzing the data values of a selected audio loop and then comparing those values to the data of another audio loop to determine respective pitch, tempo, note scale (e.g., blues, minor, rock, etc.).

[0039] In some embodiments, and as is indicated in Figure 8, the user might be provided with the option to modify the filter effects in real time. In this example, the effects button **242** has been activated which has brought a filter parameter window **810** to the forefront. In this figure, which would be most representative of the appearance of the instant invention while executing on a tablet computer, the user has been provided with the option of simultaneously adjusting two parameters by way of a stroke **820** across the face of the open window **810**. In this instance, the user will be able to simultaneously modify two parameters, although it should also be clear that a single parameter (or three or more) could be similarly modified. In Figure 8, the audio center frequency might be modified ("HIGH" to "LOW") and/or the reverb ("HEAVY" to "LIGHT"). In this example, the user has elected to increase the center frequency and increase the reverb by virtue of this single stroke **820**. Clearly, other variations of this approach are possible and have been specifically contemplated by the instant inventors.

[0040] Turning next to Figure 7, according to one embodiment, the instant invention will be used in practice generally as indicated in this figure. As a first step in this embodiment, the jam mode will be activated (step **700**). This will initiate the computer program that implements the instant invention on the device selected by the user which might include a desktop computer, a laptop computer, a smart phone, a tablet computer, etc. Next, in this embodiment, the style, tempo, and musical key of the work will be selected (step **705**).

[0041] Although the choice of instruments (Figure 2) might be conventional orchestral instruments (e.g., brass, woodwinds, violins or other stringed instruments, drum or other percussion, etc.) in some embodiments the user-specified style will guide selection of those instruments. Such a selection will automatically populate, in some embodiments, a voice bank **270** with a selection

of alternative instruments that are suitable for the selected style. For example, in the embodiment of Figure 2, selection of the rock/pop style will populate the instrument bank **270** with sounds from a rock drum set, guitars, electric or acoustic keyboards, etc. In other embodiments, e.g., where jazz is selected as the style, the voice bank **270** might include a vocal performance of scat lyrics. In still other embodiments, the selection of style will automatically populate the voice bank with horns, strings, woodwinds, etc., each of which will preferably have been selected to compliment the style selected by the user.

[0042] As a specific example, if the user selects, for example, a "salsa" style the associated instruments might include claves and/or drums (on percussion), acoustic guitar(s), bass, piano, flute, etc. The time signature will often be 12/8 or 6/8, but, in some embodiments it will be 4/4, 2/2, or 2/4.

[0043] As another example, if the user selects a "blues" style, the default instruments might be drums, guitar(s) (e.g., electric, slide, or acoustic), bass, harmonica, keyboard, fiddle (violin), etc. The time signature would most commonly be 4/4, but other choices are certainly possible. The form of the music could follow, by default, the standard 12 bar or 8 bar blues chord progressions, as those terms are known in the art. The solo instruments (e.g., lead guitar, harmonica, keyboard, etc.) would often be restricted to playing the standard blues scale (e.g., flatted third, fifth and seventh of the major scale), but other variations are certainly possible. The exact solo sequences that will be played in a given instance would be designed to follow and complete the current state of the underlying chord progression and complement it. Those sequences might be provided by the instant invention using standard riffs or sequences, or determined in real-time (e.g., randomly or according to some deterministic sequence) according to the desires of the user.

[0044] As a next preferred step **710**, the user will accept the default voice bank **270** or select alternative instruments or vocals. That is, in some embodiments, the user might prefer, by way of example only, a distorted guitar sound as opposed to an acoustic guitar sound. In such an instance, the user will be able to either accept the instruments/vocals offered or replace any of those with another instrument or vocal sound.

[0045] Next, and preferably, the user will activate a first instrument (step **715**) which will cause it to begin playing according to the parameters previously selected by the user. As is indicated in Figure 2, the activated instruments **275**, **280**, and **285** will preferably be highlighted on the screen so that the user can readily tell which instrument or instruments have been activated and are, thus, in the current mix. In some embodiments, when the instant invention will execute on a tablet computer or other device with a touch-sensitive screen. In such environments, the user will merely need to touch the associated icon in order to activate or mute an instrument.

[0046] Upon activation of the first instrument, the instant invention will preferably automatically begin a per-

formance of that instrument according to the selected style, at the selected tempo, and in the selected key or according to a selected pitch (step 725), etc. In an embodiment, the current state of the work will be communicated to the user as it is generated via a local speaker or, if the user is wearing headphones, to the user's headphones. This first instrument that is selected will provide the foundation for what is to follow. In many cases, the first instrument that is activated will be the drums, but that is not a requirement.

[0047] Next, the instant invention will, in some embodiments, begin to continuously record the performance (step 730). Of course, at the first iteration, there will typically be a single instrument that is playing but, subsequently, more instruments will be added as is discussed below. In some embodiments, for example, if the user has elected automatic generation of a music work, the recording will be initiated using all appropriate instruments. In that case, the user will select / deselect and modify the instruments that are currently playing as described below.

[0048] Returning to the example of Figure 7, in an embodiment, the starting and stopping of the recording will be under the control of the user and the recording may not commence until after the user has added several instruments to the mix, at which time it will begin automatically. In other cases, no recording will be performed until the user specifically selects that option (e.g., via the on-screen "Record" button 295 in Figure 2).

[0049] Next, if the user has made a change in the settings (decision item 735), the instant invention will preferably follow the "YES" branch. On the other hand, if no change has been made in the settings (i.e., the "NO" branch of decision item 735), the instant invention will preferably branch to step 725 and thereby continue to perform and, optionally, record the performance according to the step 730.

[0050] If there has been a change in the settings per the "YES" branch of decision item 735, in some embodiments, a test will be performed to determine whether or not the change that has been made is an indication that the user wishes to stop the music generation process (decision item 738). If the user has decided to end the music creation process (i.e., the "YES" branch of decision item 738), the instant invention will preferably write whatever recording was made to nonvolatile computer storage / computer readable media (e.g., magnetic disk, flash memory, CD, DVD, etc.) and stop the music creation process (step 750).

[0051] On the other hand, if there is no indication that user wishes to stop (the "NO" branch of decision item 738), the user will be given an opportunity to make changes in the performance environment (step 740). In this instance, and according to some embodiments, the user will be given the option of replacing any or all of the items in the instrument bank 270, adjusting the relative volume of each instrument in the mix, adjusting the tempo of the entire work, changing the style of the entire musical work,

it's key, time signature, etc. In short, the user will be given the option of modifying any performance-related parameter in real time while the performance and/or recording is taking place (step 740). As is discussed in greater detail below, changed parameters will be instantly reflected in the audio output of the work, where "instantly" should be understood to mean that the changes will be performed at the next moment when it would make musical sense to do so (e.g., at the next beat, at the start of the next measure, etc.), i.e., at a moment that is musically synchronous with the instruments / style / tempo that are already in the performance. Said another way, in an embodiment, any change that the user makes in a performance variable will be immediately reflected in the audio output of the performance.

[0052] Next, and preferably, the change or changes indicated by the user will be implemented in the musical performance (step 745) in such a way as to harmoniously combine the additional, changed, or removed (muted) instruments/vocals with the current performance. This might mean, by way of example, matching the tempo of the current performance, its key, etc. Preferably, the new instrument will not enter the mix until the start of the next full measure of the performance but that is not a requirement. Of course, it is not a requirement that the modifications be only introduced at measure boundaries and, in some embodiments, the next beat (or 1/8th note, 1/16th note, etc.) could be used as an entry point. Any point of entry might be used so long as the entry is at musically synchronous moment so as to create a harmonious combined work. Those of ordinary skill in the art will readily be able to devise other methods of smoothly adding new instruments to the output mix.

[0053] In summary, the instant invention provides a highly creative work method for both novice and professional user when generating music or just enjoying music and the music generation process. The instant invention will adapt to the knowledge and professionalism of the user providing individual options and features for selection that either adds complexity (for professionals) or minimizes complexity (for novice users).

CONCLUSIONS

[0054] Of course, many modifications and extensions could be made to the instant invention by those of ordinary skill in the art. For example in one preferred embodiment the instant invention will enter a random creativity mode, wherein the method will automatically change and replace loops, instruments and pitch. This mode will be entered when the user interaction level is very low. In another preferred embodiment the user can link an instrument with the instant invention and the method will "listen" to the input from the instrument of the user and will accordingly select song parts, instruments and pitch to therewith generate a music work.

[0055] Thus, the present invention is well adapted to carry out the objects and attain the ends and advantages

mentioned above as well as those inherent therein. While the inventive device has been described and illustrated herein by reference to certain preferred embodiments in relation to the drawings attached thereto, various changes and further modifications, apart from those shown or suggested herein, may be made therein by those of ordinary skill in the art, without departing from the spirit of the inventive concept the scope of which is to be determined by the following claims.

Claims

1. A method of performing a musical work for a user, comprising the steps of:

a. accessing a clip database containing a plurality of audio clips, each of said plurality of audio clips being associated with at least one clip music style;
 b. requiring a user to select a music style;
 c. determining a tempo and a key;
 d. assembling a voice bank, wherein said voice bank is comprised of two or more of said plurality of audio clips, each of said assembled two or more audio clips having at least one of said at least one associated clip music style compatible with said selected music style;
 e. presenting a representation of said two or more audio clips in said voice bank to the user on a display device;
 f. requiring the user to select from said displayed representation of said voice bank a first clip from among said assembled two or more audios clips;
 g. modifying said first clip at least according to said tempo and said key, thereby producing a modified first clip;
 h. initiating a performance of said modified first clip in said selected music style;
 i. creating an audible representation of said performance of said modified first clip for the user;
 j. requiring the user to select from said displayed representation of said voice bank a clip different from said first clip, thereby selecting a second clip;
 k. modifying said second clip at least according to said tempo and said key, thereby creating a modified second clip;
 l. adding said modified second clip to said performance of said first modified clip in real time during said performance of said modified first audio clip to create a combined performance, wherein said modified second clip is added at a moment that is musically synchronous with said performance of said modified first clip;
 m. creating an audible representation of said combined performance for the user;
 n. performing at least steps (j) through (m) a plu-

ality of times for a plurality of different second clips, thereby performing the musical work for the user.;

2. A method of performing a musical work according to Claim 1, wherein said instrument clips are selected from a group consisting of a horn, a guitar, a vocal performance, a drum, a harmonica, and a violin.

3. A method of performing a musical work according to Claim 1, further comprising the step of:

n. storing at least a portion of said performed musical work on a computer readable medium.

4. A method of performing a musical work according to Claim 1, wherein step (c) comprises the step of:

(c1) requiring the user to select a tempo and a key, thereby determining said tempo and said key.

5. A method of performing a musical work for a user on a computing device having a touch sensitive display, comprising the steps of:

a. requiring a user to select a music style;
 b. determining a tempo and a key;
 c. accessing a clip database comprised of a plurality of audio clips associated with said music style;
 d. assembling a voice bank, wherein said voice bank is comprised of two or more of said plurality of audio clips;
 e. displaying a representation of said two or more voice bank audio clips on said display device;
 f. requiring the user to select a first clip from among said displayed representations of said two or more voice bank audio clips;
 g. modifying said first clip at least according to said tempo and said key, thereby producing a modified first clip;
 h. performing said modified first clip in said selected music style, wherein said performance comprises creating an audible representation of said performed modified first clip;
 i. requiring the user to select a clip different from said first clip from said displayed representations of said two or more voice bank audio clips, thereby selecting a second clip;
 j. modifying said second clip at least according to said tempo and said key, thereby creating a modified second clip;
 k. during said performance of said first modified audio clip, including said modified second clip in said performance of said modified first clip in real time to create a combined performance,

wherein said modified second clip is added at a moment that is musically synchronous with said performance of said modified first clip; and, l. performing at least steps (i) through (k) a plurality of times so as to include a plurality of different modified second clips in said performance of said modified first clip, thereby performing the musical work for the user.

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6. A method of performing a musical work for a user on a computing device having a touch sensitive display according to Claim 5, wherein step (f) comprises the step of:

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(f1) requiring the user to select a first clip from among said displayed representations of said two or more voice bank audio clips by touching said touch sensitive device at a location proximate to said displayed representation of said first clip.

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Figure 1

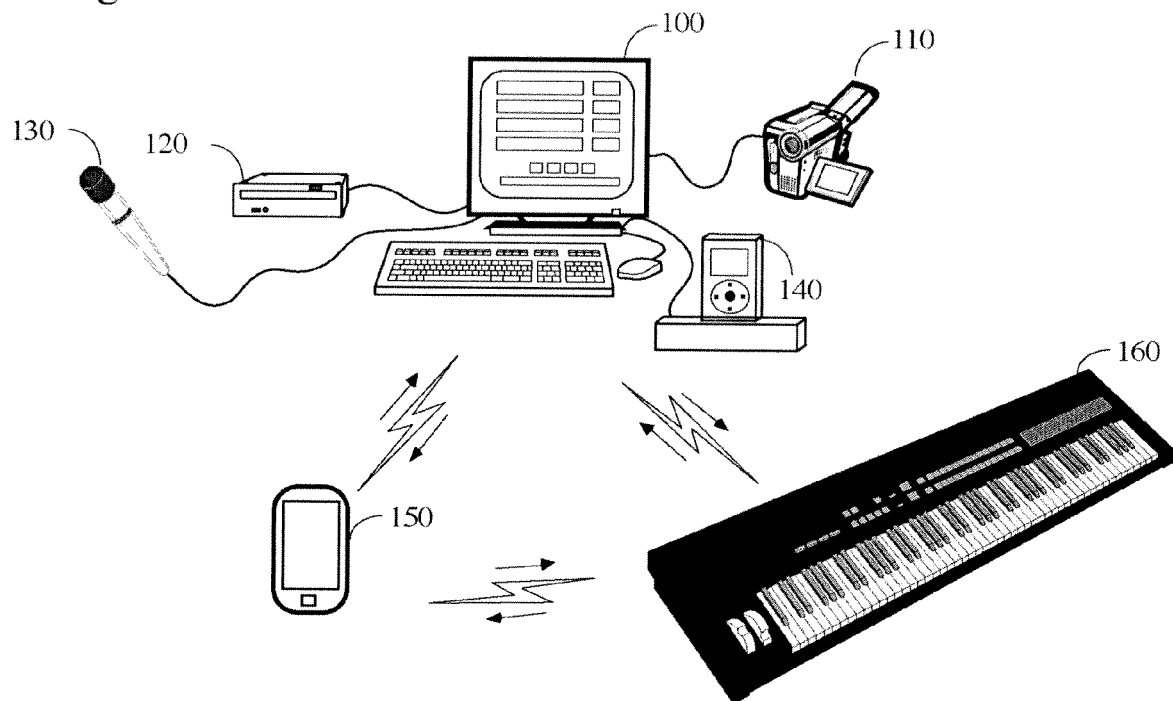


Figure 3

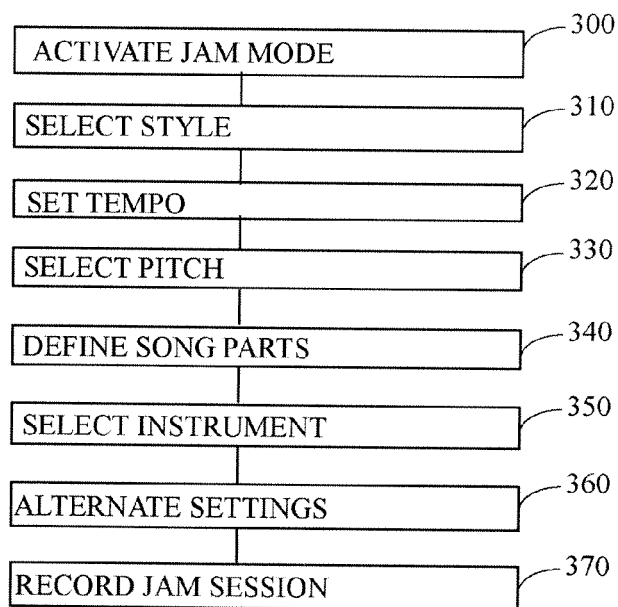


Figure 2

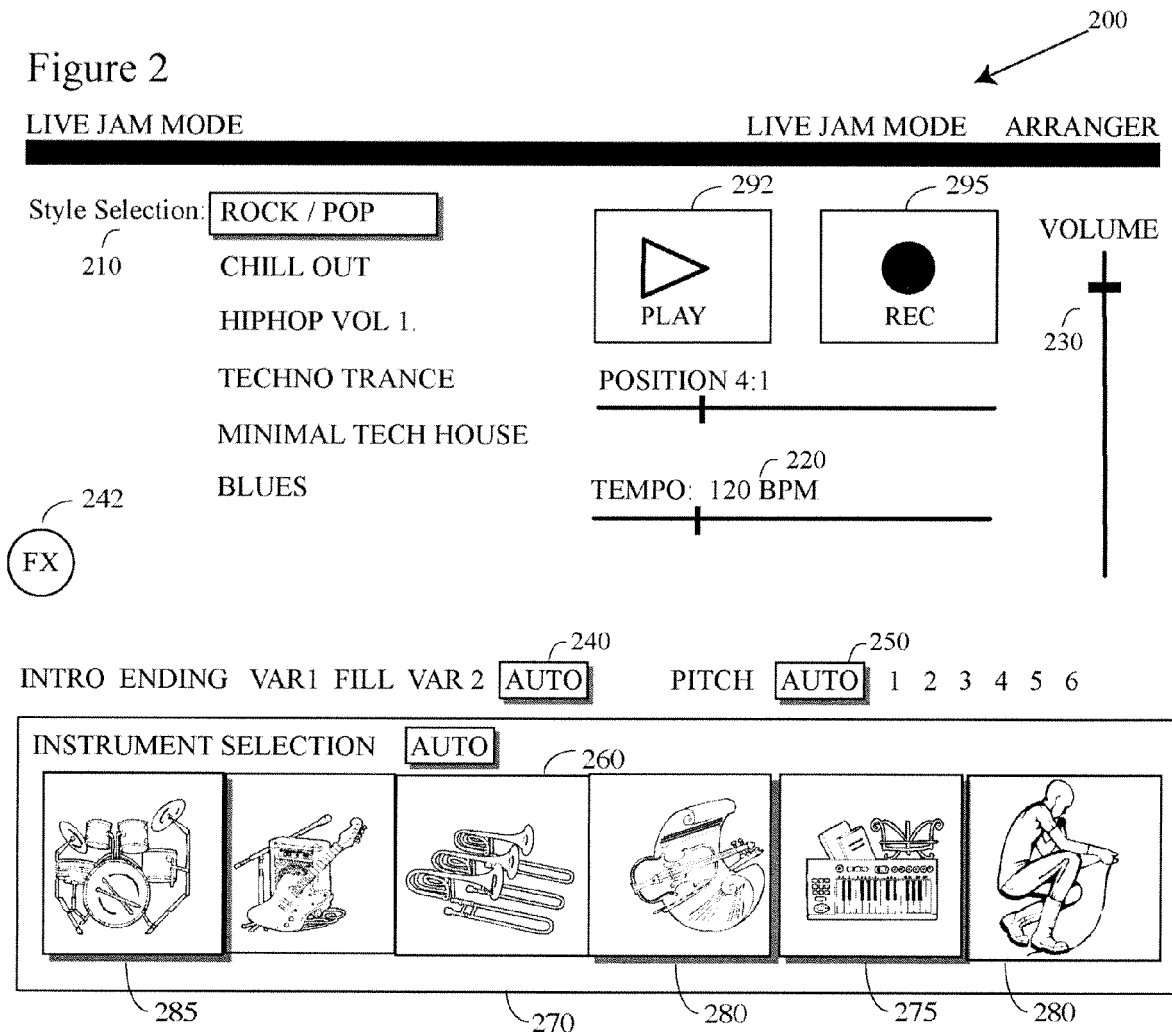


Figure 4

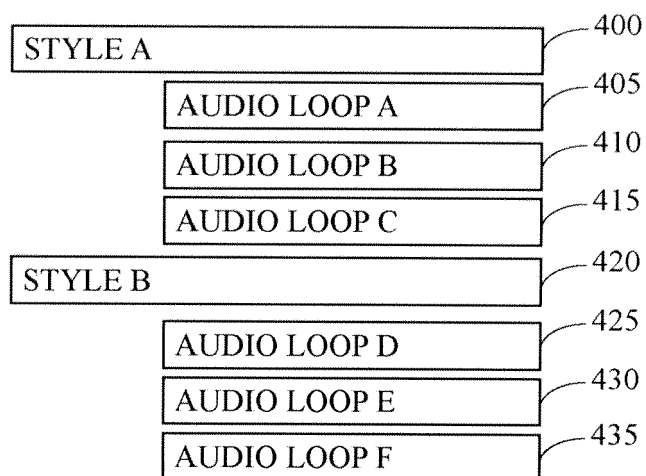


Figure 5

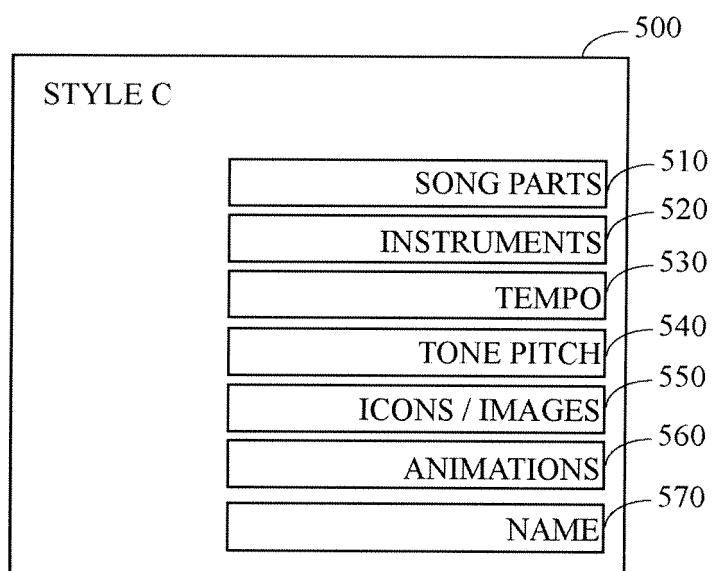
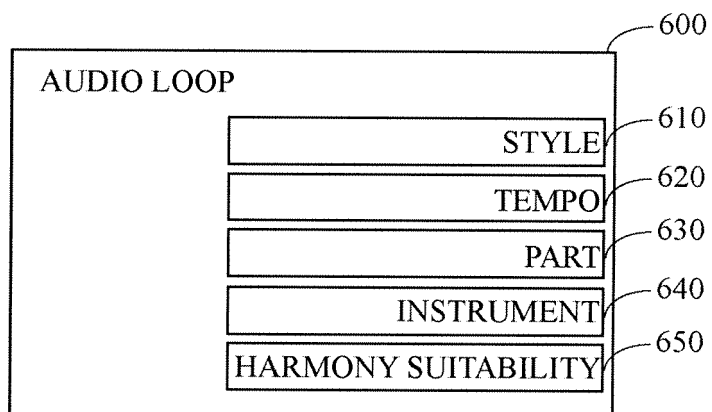


Figure 6



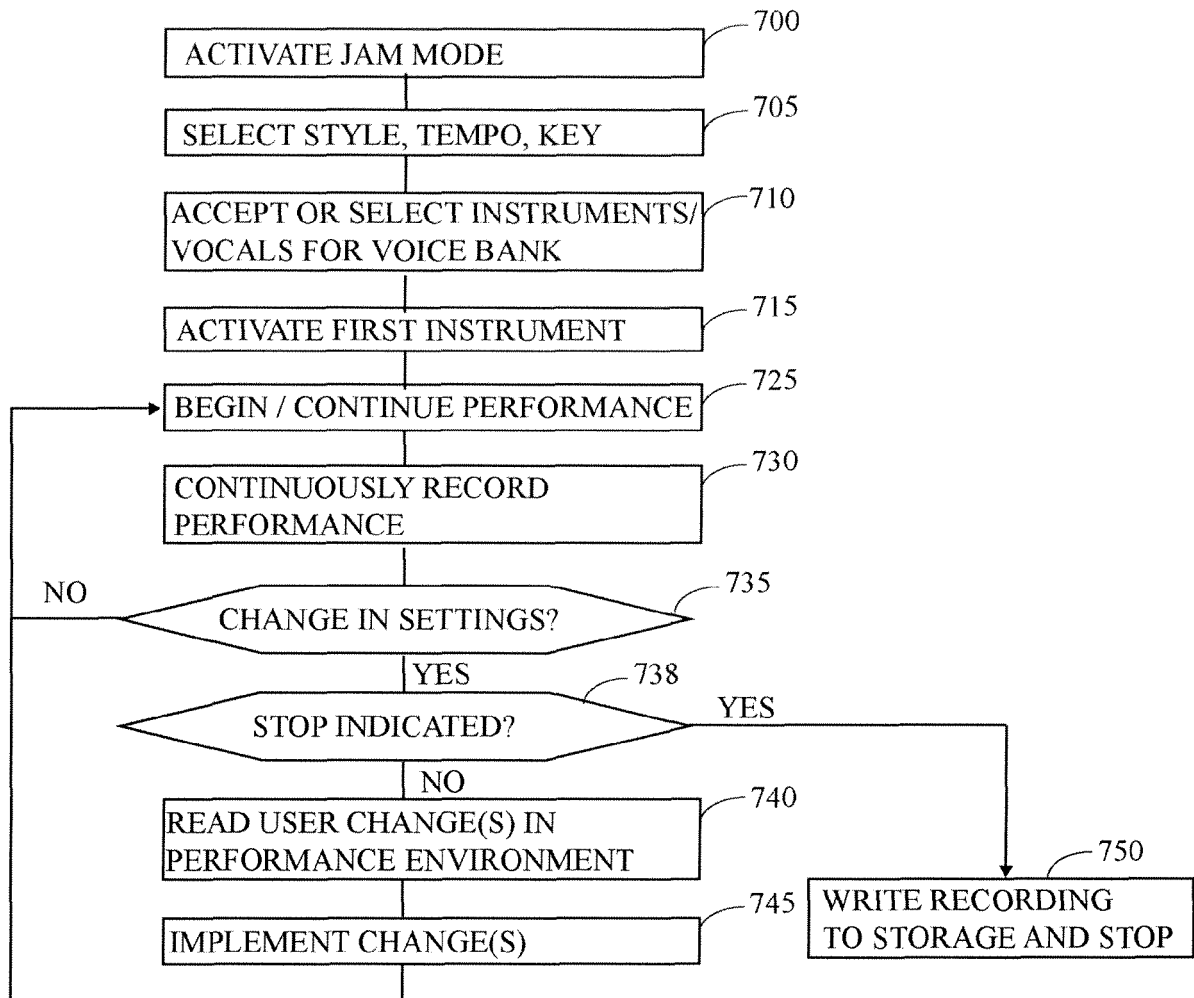
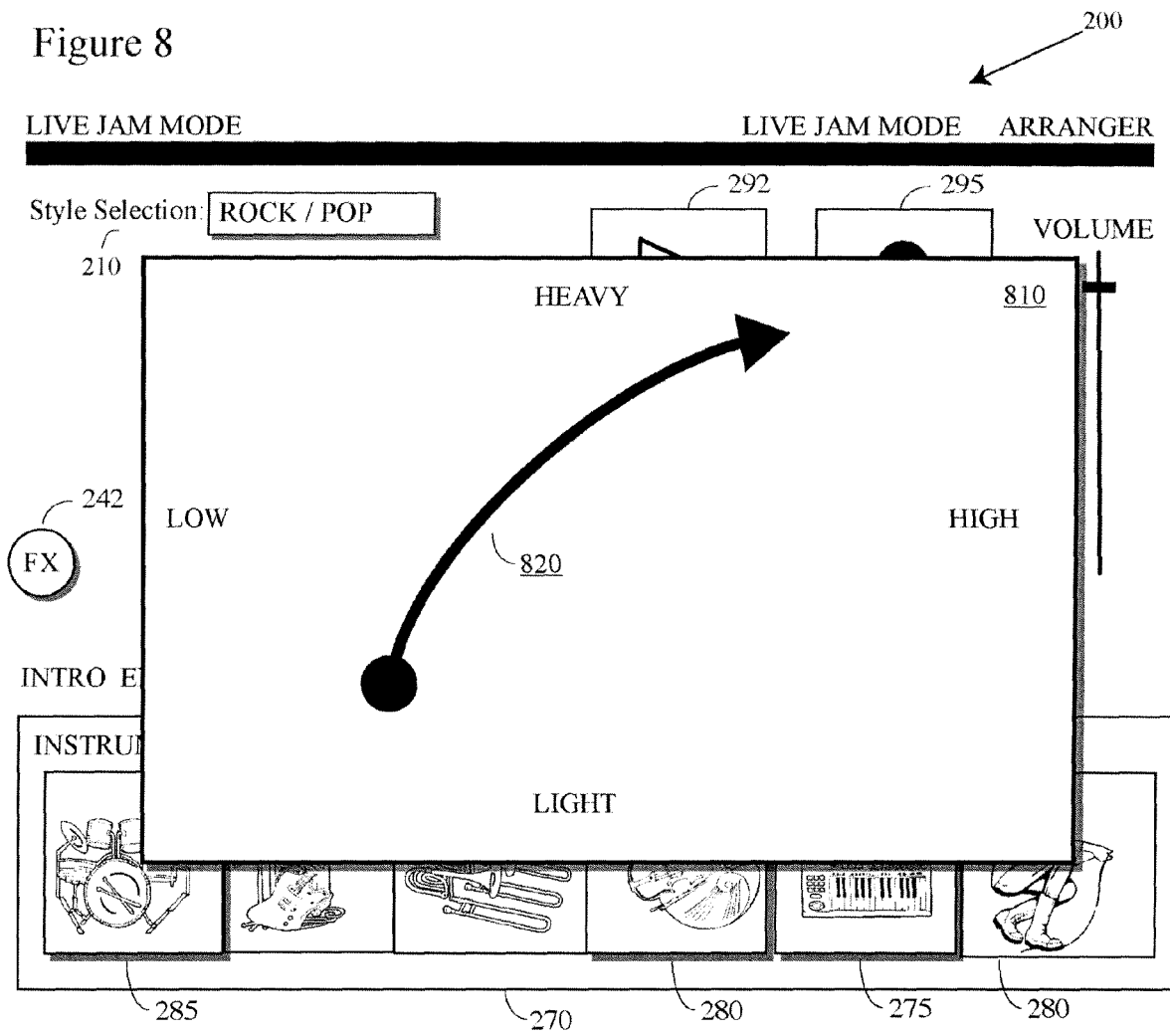


Figure 8



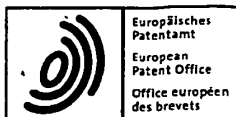


EUROPEAN SEARCH REPORT

 Application Number
 EP 13 19 7613

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
13 X	APPLE CORP: "GARAGEBAND AT A GLANCE", INTERNET CITATION, 1 January 2004 (2004-01-01), pages 1-9, XP007901087, Retrieved from the Internet: URL: http://manuals.info.apple.com/en_US/GarageBand-AtAGlance.pdf [retrieved on 2006-09-11] * velocity = tempo control. multi-tracks editing; figure 1 * * transpose = determining a key; figure 1 * * selecting music genre and adding loops; page 6 *	1-6	INV. G10H1/00 G06F17/30 ADD. G10H1/36
4 X	EP 1 557 836 A2 (MAGIX AG [DE]) 27 July 2005 (2005-07-27)	1-4	TECHNICAL FIELDS SEARCHED (IPC) G10H G06F
Y	* automatically transform an audio clip to any desired pitch, tempo; paragraph [0037]; claims 1-3; figure 4 * * replacing an existing clip with a different - but compatible - clip; paragraph [0059]; figures 6,7 * * tracks 420 - 470; figure 4 * * automatically composing multimedia by combining several clips according to track type; claims 12, 16, 17 * * A recorded instrument is automatically converted to a matching tempo and key signature; paragraph [0064] *	5,6	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		6 June 2014	Glasser, Jean-Marc
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 13 19 7613

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
1 X	EP 1 876 583 A1 (SONY CORP [JP]) 9 January 2008 (2008-01-09) * level of arrangement into a music type; loops; claim 7; figures 18,21, 23, 38 *	1-4 5,6	
4 Y	US 2010/305732 A1 (SERLETIC MATT [US]) 2 December 2010 (2010-12-02) * creator's profile in metadata; paragraph [0098] * * automatically reordering, based on genre, multiple sections to create a complete musical compilation; paragraph [0080]; figure 3 * * automatic production of a "best" take; paragraph [0139] * * touch screen; paragraphs [0010], [0068], [0120], [0191]; figures 28, 29 *	5,6	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 June 2014	Examiner Glasser, Jean-Marc
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EP 13 19 7613

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