A SYSTEM FOR PLAYING MUSIC ON A MEDIA DEVICE

A system of playing music on a device using one or two fingers, comprising: a computer program being stored on a media readable by the device, upon being installed in the media device, the media device read the musical system and thereafter, the musical system configure the media device such that an user could play music tracks comprising of digital data representing a musical note, whereby the digital data which represented the selected musical notes are divided into melody, harmony, bass, rhythm and vocal coach.
A SYSTEM FOR PLAYING MUSIC ON A MEDIA DEVICE

Field of the Invention
The present invention relates to a system for playing music and more particular, to a system that enables the user to play the music in a general purpose media device using only one or two fingers.

Background
Many music applications exist on various media platforms but none of them are created from ground up to work well as a musical accompaniment with limited screen sizes. The design of all existing music applications are limited by the application of common musical theory.

The present invention addresses the problem by playing music on a portable media device with limited display area. It overcomes the problem by allowing the musician the ability to play music that sounds like typical accompaniment using only one or two fingers. This is accomplished by installing a new improved musical system into the media device.

Various ways of solving this problem have been devised. The existing solutions range from having software that can automatically play the parts required with minimal human interaction to convoluted finger combinations on the limited screen space. In most cases, software is used to compute the necessary musical elements that are not manually triggered by direct human interaction.

One possible prior technology that is mechanical in nature is demonstrated by the autoharp. The autoharp uses a system of 'chord bars' to simplify the process of playing accompaniment by chords.

The accordion also has a system that allows the rendering of accompaniment, namely the 'bass' and 'pre-set chord buttons', with one hand while the other hand plays the melody. There are apparently differing ways of constructing the accompaniment side of the accordion.
The existing methods of solving the problem do not adequately address usability issues like how large human fingers are and how they naturally move in a small area like the touch-screen of a handheld device.

The invention overcomes this by using a creative way of laying out buttons so that only one or two fingers are required to play a wide range of possible chords for accompaniment.

The buttons are arranged in such a way as to ensure that the fingers never have to overlap and a person can navigate the full screen while comfortably resting the device on their palms.

The buttons are also precisely placed as to make musical sense. The adjacent buttons have musical relationships and are all deliberately arranged.

In order for the harmonic component of the invention to properly render the musical notes that will sound natural for use in accompaniment, a special algorithm is use to calculate the multiple notes that are sounded when the user presses a single trigger (button). This algorithm models the mental activity of a skilled accompaniment musician and the choices that will be made in a musical performance.

The foregoing and other objectives, features and advantages of the invention will be more readily understood upon consideration of the following detailed description of certain preferred embodiments of the invention, taken in conjunction with the accompanying drawings.

**Summary of the invention**

In accordance with an aspect of the present invention, there is provided a system of playing music on a device using one or two fingers, comprising: a computer program being stored on a media readable by the device, upon being installed in the media device, the media device read the musical system and thereafter, the musical system configure the media device such that an user could play music tracks comprising of digital data representing a musical note, whereby the digital data which represented the selected musical notes are divided into melody, harmony, bass, rhythm and vocal coach.
Brief description of the drawings

By way of example / illustration only, an embodiment of the invention is described more fully hereinafter with reference to the accompanying drawings, in which:-

Figure 1a illustrates the general layout of a general purpose media device having buttons.

Figure 1b and 1c shows two instances of the general layout of the media device.

Figure 2 shows the digital data which represented the selected musical notes is divided into melody, harmony, bass, rhythm and vocal coach.

Figure 3 shows the digital data representing the selected musical notes associated with melody is mapped onto each of the buttons of the media device.

Figure 4 shows the digital data representing the selected musical notes associated with harmony is mapped onto each of the buttons.

Figure 5 shows the digital data representing the selected musical notes associated with rhythm is mapped onto each of the buttons.

Figure 6 shows the digital data representing the selected musical notes associated with rhythm is mapped onto each of the buttons.

Figure 7 shows the digital data representing the selected musical notes associated with bass are mapped onto each of the buttons located on one part of the media device and the digital data representing the selected musical notes associated with harmony are mapped onto each of the buttons located on another part of the media device.

Figure 8 illustrates the layout of the buttons on the media device according to an embodiment of the present invention.

Figure 9 shows the song key being represented by alphabetical musical symbols.
Detailed Description

Figure 1a illustrates the general layout of a general purpose media device 104 having buttons 102 thereon for user to press and thereby play a selected musical notes.

Figure 1b shows an instance of the general layout of the media device 104. The media device may be a touch screen media device 104 in which a musical system (which are described later) are installed therein and create touch screen buttons 102 for which the user press and play the selected musical notes. A tactile layer (not shown) may be attached to the touch screen to give the user a feel as to where the buttons 102 lies by touching.

Figure 1c shows another instance of the general layout of the media device 104. The media device 104 may be a media device having the conventional telephone keys representing the buttons 102. A musical system (which are described later) is installed into the media device 104 and configure the buttons 102 such that the user is able play the selected musical notes by pressing the buttons 102.

The musical system generally comprises of a computer program being stored on a media readable by the media device 104. Upon installing the musical system in the media device 104 by conventional method, the media device 104 read the musical system and thereafter, the musical system would configure the media device 104 such that an user could play music tracks comprising of digital data representing a musical note.

As shown in figure 2, in order for the musical system to configure the media device 104 so that the user could play the music tracks comprising of digital data 202 representing a selected musical notes, the digital data 202 which represented the selected musical notes is first divided by the musical system into melody 204, harmony 206, bass 208, rhythm 210 and vocal coach 212.

A melody, also tune, voice, or line, is a linear succession of musical tones which is perceived as a single entity. In its most literal sense, a melody is a sequence of pitches and durations, while, more figuratively, the term has occasionally been extended to include successions of other musical elements such as tone color. Melodies often consist of one or more musical phrases or motifs, and are usually repeated throughout a song or piece in various forms. Melodies may also
be described by their melodic motion or the pitches or the intervals between pitches (predominantly conjunct or disjunct or with further restrictions), pitch range, tension and release, continuity and coherence, cadence, and shape.

In music, *harmony* is the use of simultaneous pitches, or chords. The study of harmony involves chords and their construction and chord progressions and the principles of connection that govern them. Harmony is often said to refer to the "vertical" aspect of music, as distinguished from melodic line, or the "horizontal" aspect. Counterpoint which refers to the interweaving of melodic lines and polyphony which refers to the relationship of separate independent voices are thus sometimes distinguished from harmony.

*Bass*, when used as an adjective, is used to describe tones of low frequency or range. Played in an ensemble/orchestra, such notes are frequently used to provide a counterpoint or counter-melody, in a harmonic context either to outline or juxtapose the progression of the chords, or with percussion to underline the rhythm. In popular music the bass part most often provides harmonic and rhythmic support, usually playing the root or fifth of the chord and stressing the strong beats. Music players are generally considered better quality if the bass notes can be heard clearly and loudly, as many music players operate with a high level of treble and minimum bass.

*Rhythm* is the variation of the length and accentuation of a series of sounds or other events.

Vocal coach is a function that enables the visually impaired people to “see” the screen based on audio feedback. Vocal coach is able to instruct the user how to play the musical system on the media device (tutor mode) and also produce an audio to describe and identify the button whenever the user presses onto any one of the buttons (mixed mode).

In a first embodiment of the present invention as shown in figure 3, the digital data 202 representing the selected musical notes associated with melody 204 is mapped onto each of the buttons 102. The buttons 102 may be arranged in the prescribed arrangement on the media device 104. It is submitted that the user only require to play a selected musical notes with only one finger, that is, by using one finger to press on the buttons 102 in order to play a selected musical notes.
In a second embodiment of the present invention as shown in figure 4, the digital data 202 representing the selected musical notes associated with harmony 206 is mapped onto each of the buttons 102. The buttons 102 may be arranged in the prescribed arrangement on the media device 104. It is submitted that the user only require to play a selected musical notes with only one finger, that is, by using one finger to press on the buttons 102 in order to play a selected musical notes.

In a third embodiment of the present invention as shown in figure 5, the digital data 202 representing the selected musical notes associated with bass 208 is mapped onto each of the buttons 102. The buttons 102 may be arranged in the prescribed arrangement on the media device 104. It is submitted that the user only require to play a selected musical notes with only one finger, that is, by using one finger to press on the buttons 102 in order to play a selected musical notes.

In a fourth embodiment of the present invention as shown in figure 6, the digital data 202 representing the selected musical notes associated with rhythms 210 is mapped onto each of the buttons 102. The buttons 102 may be arranged in the prescribed arrangement on the media device 104. It is submitted that the user only require to play a selected musical notes with only one finger, that is, by using one finger to press on the buttons 102 in order to play a selected musical notes.

In a fifth embodiment of the present invention as shown in figure 7, the digital data 202 representing the selected musical notes associated with bass 208 are mapped onto each of the buttons 102 located on one part of the media device 104. At the same time, the digital data 202 representing the selected musical notes associated with harmony 206 are mapped onto each of the buttons 102 located on another part of the media device 104. It is submitted that the user only require to play a selected musical notes with only two fingers, that is, by using one finger from one hand to press on the buttons 102 associated with bass 208 and the other finger from the other hand to press on the buttons 102 associated with harmony 206.

Figure 8 illustrates the layout of the buttons on the media device according to an embodiment of the present invention. As shown, the media device 104 comprises of melody key 804, harmony
key 806, bass key 808, rhythms key 810 and vocal coach key 812 located at one part of the media device 104. The user can press any one of these keys with one finger to activate the desired mode so that the user can play the selected musical notes from the buttons 102 which are located on the other part of the media device 104.

Figure 8 further illustrates a display of things that can be set using the buttons. When an user goes about to play a song, the user have to know the song key (which is described later) to be played, the number of beats per bar and the tempo to play in. The display 818 shows what is currently selected. To change them, the user may use the function buttons, "-" and "+" or the other 2 buttons 814, 816.

In the first instance, the user may press on the melody key 804 with one finger to activate the melody mode. Upon pressing, as described earlier in figure 3, the digital data 202 representing the selected musical notes associated with melody 204 is mapped onto each of the buttons 102. Thereafter, the user may press on the buttons 102 with one finger to play a selected musical notes.

In the second instance, the user may press on the harmony key 806 to activate the harmony mode. Upon pressing, as described earlier in figure 4, the digital data 202 representing the selected musical notes associated with harmony 206 is mapped onto each of the buttons 104. Thereafter, the user may press on the buttons 102 with one finger to play a selected musical notes.

In the third instance, the user may press on the bass key 808 to activate the bass mode. Upon pressing, as described earlier in figure 5, the digital data 202 representing the selected musical notes associated with bass 208 is mapped onto each of the buttons 102. Thereafter, the user may press on the buttons 102 with one finger to play a selected musical notes.

In the fourth instance, the user may press on the rhythms key 810 to activate the rhythms mode. Upon pressing, as described earlier in figure 6, the digital data 202 representing the selected musical notes associated with rhythms 210 is mapped onto each of the buttons 102. Thereafter, the user may press on the buttons 102 with one finger to play a selected musical notes.
In the fifth instance, the user may press on the vocal coach (VC) button 812 to activate the VC mode. Upon activation, vocal coach is able to instruct the user how to play the musical system on the media device (tutor mode) and also produce an audio to describe and identify the button whenever the user presses onto any one of the buttons (mixed mode). Furthermore, in the VC mode, touching the portion of the display will cause Vocal Coach to read the display out. In this manner, a person could play the media device in the dark since the audio is able to describe and identify the button. Further, such feature may also assist blind people or visually impaired people to play the media device too since the audio is able to describe and identify the button.

As commonly known, in music theory there are twelve tones. These twelve tones are used, with varying pitch, to play the whole range of musical notes.

An example of a musical scale is the chromatic scale which has 12 tones, each is a half step apart. A chromatic scale is a nondiatonic scale consisting entirely of half-step intervals, having, no tonic, due to the symmetry or equal spacing of its tones. The most common conception of the chromatic scale before equal temperament was the Pythagorean chromatic scale, which is essentially a series of eleven 3:2 perfect fifths. The twelve-tone equally tempered scale tempers, or modifies, the Pythagorean chromatic scale by lowering each fifth slightly less than two cents, thus eliminating the Pythagorean comma of approximately 23.5 cents. Various other temperaments have also been proposed and implemented.

It is submitted that a musical scale may be referenced by song key. Examples of such musical scale includes "F major scale" and "A Minor Scale". Song key is represented by alphabetical musical symbols as shown in figure 9.

As further shown in figure 9, there are only 12 possible song keys. It is submitted that when playing a song, a particular song key has to be preselected before the actual performance of the song. After the song key is selected, all the 12 tones are assigned numbers according to the table in figure 9. Each number assigned corresponds to an actual musical button.

The user can then play the selected musical notes from the buttons. Since each of the buttons corresponds to a particular numbers which correspond to an actual musical note, the user who is
familiar with the musical system is able to play the desired musical tracks on the media device with one or two fingers.

From the foregoing it will be seen that this invention is one well adapted to attain all ends and objects hereinabove set forth together with the other advantages which are obvious and which are inherent to the structure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

Since many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative, and not in a limiting sense.
Claims:
1. A system of playing music on a device using one or two fingers, comprising:
   a computer program being stored on a media readable by the device, upon being
   installed in the media device, the media device read the musical system and thereafter,
   the musical system configure the media device such that an user could play music tracks
   comprising of digital data representing a musical note,
   whereby the digital data which represented the selected musical notes are
   divided by the system into melody, harmony, bass, rhythm and vocal coach.

2. The system accordingly to claim 1, wherein the media device may be may be a touch
   screen media device which the musical system are installed therein and create touch
   screen buttons for which the user press and play the selected musical notes.

3. The system according to claim 1, wherein the media device may have conventional
   telephone keys representing buttons, in which the musical system is installed into the
   media device and the buttons such that the user is able play the selected musical notes
   by pressing the buttons.

4. The system according to any one of the preceding claims, wherein the digital data
   representing the selected musical notes associated with melody is mapped onto each of
   the buttons, whereby the buttons may be arranged such that the user only require to play
   a selected musical notes with only one finger.

5. The system accordingly to any one of the preceding claims, wherein the digital data
   representing the selected musical notes associated with harmony is mapped onto each
   of the buttons, whereby the buttons may be arranged such that the user only require to
   play the selected musical notes with only one finger.

6. The system accordingly to any one of the preceding claims, wherein the digital data
   representing the selected musical notes associated with bass is mapped onto each of the
   buttons, whereby the buttons may be arranged such that the user only require to play a
   selected musical notes with only one finger.
7. The system accordingly to any one of the preceding claims, wherein the digital data representing the selected musical notes associated with rhythms is mapped onto each of the buttons, whereby the buttons may be arranged such that the user only require to play a selected musical notes with only one finger.

8. The system according to any one of the preceding claims, wherein the digital data representing the selected musical notes associated with bass are mapped onto each of the buttons located on one part of the media device, the digital data representing the selected musical notes associated with harmony are mapped onto each of the input buttons on one part of the media device on another part of the media device, whereby the user only require to play the selected musical notes by using one finger from one hand to press on the buttons associated with bass and the other finger from the other hand to press on the buttons associated with harmony.
Figure 8
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<th>2</th>
<th>3b</th>
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<th>4</th>
<th>4#</th>
<th>5</th>
<th>6b</th>
<th>6</th>
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There are only 12 tones in music. This table shows how each tone is mapped to a music key according to the song key selected.

Each row represents a song key, each column represents a music tone (of which there are only 12)

Figure 9
INTERNATIONAL SEARCH REPORT  

A. CLASSIFICATION OF SUBJECT MATTER  

INV. G10H1/34 G10H1/38  
ADD.  

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)  
G10H  

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
EPO-Internal, WPI Data  

C. DOCUMENTS CONSIDERED TO BE RELEVANT  

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X Further documents are listed in the continuation of Box C.  
X See patent family annex.  

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*A* document defining the general state of the art which is not considered to be of particular relevance  

*E* earlier document but published on or after the international filing date  

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*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  

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*Z* document member of the same patent family  

Date of the actual completion of the international search  
15 June 2010  

Date of mailing of the international search report  
24/06/2010  

Name and mailing address of the ISA/  
European Patent Office, P.B. 5018 Patentlaan 2 NL - 2280 HV Hilversum  Tel: (+31-70) 340-2040,  Fax: (+31-70) 340-3016  

Authorized officer  
Peirs, Karel
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