

AN EFFECT CONTROL METHOD, AN EFFECT
CONTROL DEVICE AND A KARAOKE SYSTEM
USING SUCH METHOD AND DEVICE

[BACKGROUND OF THE INVENTION]

Technical Field

This invention relates to an effect control method and an effect control device for automatically controlling audio effect operations given to a particular audio data such as voices input via a microphone and a karaoke system which uses such a method and device.

Background Art

The "karaoke", a form of entertainment in which only the accompaniment music is regenerated and played as one sings the corresponding lyrics along with it, has been widely accepted by the general public maintaining a stable popularity. In this "karaoke", a regeneration device (hereinafter referred to as karaoke system) is used to regenerate the accompaniment part of songs and display the lyrics as telop on a monitor screen, corresponding to this accompaniment.

In general, a karaoke system converts the accompaniment part into digital audio signals as music data based on the MIDI (Musical Instrument Digital Interface) standards as well as converts the lyric part into character data. These data are stored in form of a music information in a storage media such as a CD-ROM. There is a karaoke system known wherein, a desired set of music information specified from a terminal device via a public telephone line is read out and transmitted to the terminal device from a host computer which stores a vast amount of different sets of music information (laid-open Japanese patent publication No. Hei 2-216690).

In such karaoke systems, various means have been conventionally used to provide a more satisfactory stage effect to the singing of a karaoke singer so that he/she may enjoy singing in sensation by a feeling of acting like a professional singer. Such means are generally called audio effects (hereinafter simply referred to as "effects"). These effects are applied when necessary to the accompaniment music and/or to the singer's voice input from the microphone, in order to bring more reality to the singer's performance.

[The Problem which the Invention Attempts to Solve]

However, in a conventional karaoke system, when the singer wants to apply the desired effects to his/her voice input from the microphone, he/she had to manually operate the effect device or effector installed in the amplification system from the

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exterior. That is, the effect controls desired for the voice input could only be accepted manually at the stage where the voice input is finally synthesized with the corresponding accompaniment music regenerated. As has been disclosed in laid-open Japanese patent publication No. Sho 60-23896, there does exist a karaoke system wherein automatic control is provided so that an echo effect of appropriate strength and duration is applied to the voice input from the microphone, while the accompaniment music tape is being played. However, such a device was inflexible, being limited only to echoes in the type of effect.

In general, when an effect is applied to the accompaniment part of a set of music, the settings for types of required effects are incorporated as part of the music information of the accompaniment part and can often be easily controlled in detail automatically. In contrast, in case of settings the same to the voice input from the microphone, a complicated adjustment was necessary, making it difficult to apply desired effects befitting the accompaniment part. Furthermore, even if such adjustments were attempted, a heavy operational burden is placed on the singer him/herself, and this discouraged the singer to purely enjoy the singing itself.

This invention is to solve the above-mentioned problems of the prior art and its first object is to provide an effect control method to automatically apply the desired type of effects to audio information in general without requiring troublesome manual

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operations.

A second object of the present invention is to provide an effect control device, equipping with concrete means for realizing the above-mentioned first object and to provide a karaoke system using such an effect control device.

A third object of the present invention is to provide an effect control device and by which effects can be initially set for each of a plurality of audio information flexibly when synthesizing said plurality of audio information, and to provide a karaoke system using such an effect control device.

A fourth object of the present invention is to provide an effect control device equipped with concrete means for realizing the above-mentioned third object without enlarging the device size and a karaoke system using such an effect control device.

A fifth object of the present invention is to provide an effect control device which can flexibly accept abrupt temporary effect settings for the audio information obtained from the input devices.

A sixth object of the present invention is to provide an effect control device equipped with the concrete means for realizing the above-mentioned fifth object in an quick, easy and efficient manner, without enlarging the device size.

A seventh object of the present invention is to provide a practical karaoke system using an effect control device achieving the above-mentioned second to sixth objects.

An eighth object of the present invention is to provide an

effect control device equipped with concrete means for realizing the above-mentioned seventh object without enlarging the device size.

[THE SUMMARY OF THE INVENTION]

Technical Improvements & Advantages

[Means for Solving the Problem]

The present invention is directed to a device and method for storing, selecting, and imparting audio effects to voice and music inputs and outputting the resulting audio signals. In the present invention, a storage means is provided for storing music information and effects associated therewith, and a reading means for reading the information stored in the storing means. Music information regenerating means regenerates the music from the information, and in conjunction a control means transmits the effects information to an effector which applies the audio effects to the regenerated music and a voice input from a microphone. The effect control information for the audio effects are stored together with the music information and are read out concurrently according to an initial setting for voice effects. In the present invention, a temporary setting for the voice effects can be changed so that the effects for the voice will be temporarily changed to the new setting while the music effects are maintained at the default setting.

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In a first aspect, this invention provides an effect control device comprising;

a storage means for storing a first audio information at a pre-determined first storage area;

a reading means for reading out one or more sets of audio information;

an audio information regeneration means for regenerating a set of sound based on said first audio information read out by said reading means;

an effector for applying various effects on given audio information;

one or more input means for inputting one or more sets of additional audio information to be synthesized with the regenerated said first audio information, into said effector,

said effect control device further comprising;

an initial effect setting means for respectively setting the audio effect types which are to be applied to said one or more sets of additional audio information;

one or more additional storage areas associated with said first storage area, for respectively storing said audio effect types specified by said initial effect setting means, as additional effect control data;

said reading means for reading out said additional effect control data from said one or more additional storage areas, concurrently with reading out said first audio information from said first storage area of said storage means;

a transmitting means for transmitting each of said additional effect control data read out by said reading means directly to said effector; and

a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets of additional audio information from said one or more input means, and for selecting said specified effect types as temporary additional effect control data.

In a second aspect, this invention provides a karaoke system comprising;

a storage means for storing sound information for karaoke accompaniment in a

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pre-determined first storage area;

a reading means for reading out one or more sets of audio information including said sound information;

a sound regenerating means for regenerating the sound of karaoke accompaniment music based on the corresponding sound information read out by said reading means;

an effector for applying various effects on one or more sets of voice information and/or said sound information;

one or more input means for inputting into said effector said one or more sets of voice information by the synthesized with said sound information for karaoke accompaniment music, said karaoke system further comprising;

an initial setting means for initially setting each of the audio effect types to be applied to said one or more sets of voice information input via said one or more input means; and

one or more additional storage areas associated with said first storage area, for respectively storing said audio effect types specified by said initial effect setting means, as voice effect control data;

said reading means for reading out said voice effect control data from said one or more additional storage areas concurrently with reading out said sound information from said first storage area in said storage means; and

a transmitting means for transmitting each of said voice effect control data read out by said reading means directly to said effector; and

a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets of voice information from said one or more input means, and for selecting the specified effect types as temporary voice effect control data.

In a third aspect, this invention provides an apparatus for applying one or more audio effects to a stored audio input and a spontaneous audio input, combining the two audio inputs with effects, and outputting the audio inputs with effects comprising:

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a voice receiving means for receiving a voice input;

a storage unit for storing a plurality of audio information, each said audio information comprising:

a first sector having music regeneration information,

a plurality of sectors having music effect control information associated with said music regeneration information, and

a plurality of sectors having voice effect control information corresponding with said music effect control information;

user indicator means for indicating one of said music regeneration information to be retrieved from said storage unit, a default effect type, and a current effect type;

reading means for reading said user indicator means and retrieving said indicated music regeneration information from said storage unit, and further retrieving said music effect control information corresponding with said indicated default effect type and said voice effect control information corresponding to said current effect type;

music regeneration means for receiving said music regeneration information from said reading means and regenerating an audio signal therefrom;

music effect applying means for receiving said music effect control information from said reading means and said audio signal from said music regeneration means, and for applying an effect corresponding to said music effect control information to said audio signal;

voice effect applying means for receiving said voice input from said voice receiving means and said voice effect control information from said reading means, and for applying an effect corresponding to said voice effect control information to said voice input;

control means for transmitting said music effect control information corresponding to said default effect from said reading means to said music effect applying means, and for transmitting voice effect control information corresponding to said current effect type from said reading means to said voice effect applying means; and

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with effect applied from said voice effect applying means, synthesizing the audio signal and voice input, and outputting the synthesized audio signal and voice input.

According to a preferred feature of the invention, a composition is provided for carrying out automatic effect control on said first audio information as well. That is, a first control data for specifying the contents of the effect to be applied to said first audio information are stored in a third storage, associated with said first audio information. By doing this, various effects can be applied more flexibly to both said first audio information as well as said one or more sets of additional audio information.

According to another preferred feature, a composition is provided for carrying out automatic effect control of both said first audio information, said one or more sets of additional audio information in an undivided manner. That is, in the above-mentioned storage means, the first storage area retaining said first audio information, a third storage area retaining said first effect control data set for said audio information, and a additional effect control data set for said one or more sets of additional audio information, may be stored together in the same data block. The scale of the device is thus prevented from becoming enlarged, since different storage areas or storage means do not have to be added for each information or data to be stored.

According to a further preferred feature of the invention, the initial settings are secured even when the temporary effect are performed. That is, the temporary setting is automatically cleared after once applied to audio information. This thus encourages more efficient and smooth effect operation.

According to yet another preferred feature of the invention, both the temporary and effect the initial effect settings are performed by using one single setting switch. The effect settings are thus made in a simple and easy way, without enlarging the device size.

Other and further objects, features, and advantages of the present invention will be more fully described in the following description.

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Brief Explanation of the Drawings

Fig. 1 is a block diagram showing the overall composition of the communication karaoke system of an embodiment of the present invention.

Fig. 2 is a block diagram showing the composition of the commander 200 in an embodiment of the present invention.

Fig. 3 is a schematic drawing which explains the composition of the sound information (MIDI data) into which the effect control data are incorporated in an embodiment of the

present invention.

Best Mode of Carrying out the Invention

1. Overall composition

An embodiment of the present invention shall now be described with reference to the drawings. Fig.2 shows the overall composition of a communication karaoke system, which is an embodiment of the present invention. As shown in Fig.2, the karaoke system of the present embodiment accesses a VAN (Value Added Network) 212 via a public telephone line 211 to obtain the necessary music information from among a vast amount of different music information stored in the main database 213 of a large-scale host computer.

In Fig.2, the commander 200, which is the terminal karaoke regeneration device, is connected to; a CD changer 201 equipped with an auto-change function for driving a CD-ROM 207, an interface I/F 202 for connecting to the above-mentioned public telephone line 211, an FM receiver 203 for receiving voices input from microphone 208, an LD regeneration device 204 for outputting the desired image during karaoke performance, a CRT (cathode ray tube) 205 for outputting the lyrics (telop) and the accompanying image, and an amplifier 206 for amplifying the music information and the singer's voice and transmitting them to

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speaker 209. This commander 200 is remote- controlled by means of input operation pad 210 for specifying the music information which is desired to be referred or sung.

In this embodiment, the karaoke music information is compressed and stored in the above-mentioned CD-ROM 207 by the Moving Picture Experts Group standard (MPEG) method. As shown by 3A of Fig.3, this music information can be sound information or visual information corresponding to the sound information. Among these, the sound information is on audio piece of the music information which mainly concerns the karaoke accompaniment music. The sound information is converted into digital signals in accordance with MIDI standards (hereinafter referred to as MIDI data).

In Fig.3, each data block 3B for the above-mentioned MIDI data includes sound note data 3a as predetermined sector information, for specifying each note of the sound comprising the accompaniment part of the corresponding music. If necessary, accompaniment effect control data BGECD 3b, which specifies the type of effect to be applied to said sound note data 3a may also be included as a different predetermined sector information in data block 3B. Furthermore, in this embodiment, microphone effect control data, MECD 3c, which specifies the type of effect to be applied to the voice input from microphone 208 in correspondence with said sound note data 3a, may also be included as another predetermined sector information.

Of the music information, the visual information includes character data (hereinafter referred to as telop data), which concern the lyric part of the music information, and image data, which is displayed in accompaniment with the telop data.

Fig.1 shows the composition of commander 200, which is the regeneration device of the present embodiment. As shown in Fig.1, commander 200 comprises a reading part 100 for reading out the karaoke accompaniment music information and the effect control data which controls effect operation done at the effector 105, a built-in hard disk 101, for storing the music information of newly issued songs transmitted from the host database 213, an image regenerating part 102 for synthesizing and regenerating the visual information of said read-out music information, a sound regenerating part 103, for synthesizing and regenerating the sound from said read-out music information, an effect setting switch 104 for setting the contents of the effects to be applied to the voice input from microphone 208, an effector 105 for applying a pre-determined effects to the above-mentioned sound information and/or the above-mentioned voice input from microphone 208, and controlling line 106 for transmitting the effect control data read by the reading part 101 directly to the effector 105.

2. The Operations and Effects of the Present Embodiment

The operations of the communication karaoke system of the present embodiment having the above composition shall now be described.

[Operations of the present embodiment]

The present embodiment is characterized in that the effect control for the voice input via microphone 208 is performed automatically. In order to perform this automatic control, the type of effect to be applied to an arbitrary composition must be set initially with the above-mentioned effect setting switch 104, shown in Fig.1.

In the present embodiment, effect setting switch 104 is a single switch for specifying and setting the various types of effects to be applied to the voice input via the microphone by selecting a unique number in a rotary fashion. The present embodiment is arranged so that the six effect types (echo, short reverb, harmonizer, exciter, comp, and duck voice) can be set respectively with an integer from 1 to 6 at this effect setting switch 104. For example, if an echo is to be applied to the voice input from microphone 208, the number of the above-mentioned effect setting switch 104 is set initially to "1".

The type of the effect set thus becomes the default value of the above-mentioned microphone effect control data (MECD), and is incorporated as sector information of a pre-determined data block in the sound information (MIDI data) of the corresponding music information, and stored in CD-ROM 207, or, if the above-mentioned music information is on a new tune, stored in built-in hard disk 101.

The operations of the karaoke system of the present

embodiment during karaoke performance shall be described next. First, as shown in Fig.1, the song desired by the singer is specified by means of input operation pad 210. The reading part 100 searches CD-ROM 207 and reads out the music information of the above-mentioned specified song. If the music information of the above-mentioned specified song does not exist within CD-ROM 207, reading part 100 searches the above-mentioned built-in hard disk 101 and reads out the music information of the above-mentioned specified song.

Of the music information read out by reading part 100, the visual information is transmitted to image regenerating part 102. The sound information (MIDI data) is transmitted to sound regenerating part 103. If the microphone effect control data (MECD) is included within the MIDI data at this time, reading part 100 transmits this microphone effect control data directly to effector 105 via controlling line 106.

The visual information, transmitted to the image regenerating part 102, is expanded and regenerated as the telop data and the accompanying image data. Here, if an image other than the image originally accompanying the telop is desired, the video data for the desired image is read out from a separately installed optical disk by LD regeneration device 204 and displayed. This video image data is transmitted via reading part 100 to image regenerating part 102 and is synthesized thereat with the above-mentioned telop data. The visual information synthesized thus is

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transmitted to CRT 205 and displayed on the monitor.

On the other hand, the MIDI data, which is the transmitted music information, is expanded at the above-mentioned sound regenerating part 103. Of the above-mentioned MIDI data, the sound information for the karaoke accompaniment music is regenerated by a synthesizer based on MIDI standards and transmitted to effector 105. If accompaniment effect control data (BGECD) exists in said MIDI data at this time, it is also transmitted together to effector 105.

The voice of the singer singing the song is directly inputted from microphone 208 and via FM receiver 203 to effector 105.

Of the two types of effect control data transmitted to effector 105, the accompaniment effect control data (BGECD) is originally set as part of the MIDI data and this setting cannot be changed in this case. On the other hand, the microphone effect control data (MECD) is incorporated secondarily into the above-mentioned MIDI data as described above and can thus be set and changeable at any time by means of effect setting switch 104.

Based on the microphone effect control data (MECD) transmitted from reading part 100 and the accompaniment effect control data (BGECD) transmitted from sound regenerating part 102, effector 105 applies the specified effect to the voice input from the microphone and the music information of the above-mentioned regenerated accompaniment music, respectively.

If, during the rendering of the karaoke music, the effect

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setting switch 104 is manually operated by the singer and a value besides the initially set default value is specified as a desired effect type, the reading part 100 temporarily places priority on said specified value and handles this as microphone effect control data (MECD) and transmits these to effector 105 for effect operation on the microphone-input voice. After the karaoke performance is finished, the above-mentioned specified value is cleared.

The above-mentioned karaoke accompaniment music and the microphone-input voice, to which appropriate effects have been applied by effector 105 as described above, are then mixed and transmitted to amplifier 206 to be amplified and then output via speaker 209 in a manner synchronized with the image displayed on the above-mentioned CRT 205.

[Effects of the present embodiment]

As has been described above, by the present invention, the default value of the type of effect to be applied to the microphone-input voice is set in advance by means of effect setting switch 104 and this default value is securely stored in a specific sector set in the MIDI data. This default value is thereby associated with the sound information for specifying audio data of accompaniment music, and is read out simultaneously with said sound information of the accompaniment music and transmitted to effector 105. The effect control to the corresponding part of microphone-input voice is thus automated.

The microphone effect control data (MECD) is maintained

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in CD-ROM 207 until the above-mentioned default value is reset. Thus, if an appropriate effect content is set once as a default value, this setting may be used repeatedly. By automating effect control in this manner, the singer him/herself is relieved of the trouble of manually operating the effector each time he/she sings and can always obtain microphone voice with the desired effect applied.

In the present embodiment, if the singer wishes, an effect setting besides the above-mentioned default value can also be accepted from the outside. As a result, a karaoke system can provide the singer with a high level of satisfaction and joy of singing itself, eliminating a complicity of manual effect operation, without enlarging its device size.

Also, since audio information are specified note-by-note in form of MIDI data, the effect control can be set in detail for each note of the sound information. Furthermore, the default value of the effect type setting for the microphone-input voice can be set and changed easily by means of effect setting switch 104. As a result, a karaoke system enables a rich variation of microphone-output voices, to which various effects a high level of satisfaction are applied in a detailed and flexible manner.

3. Other Embodiments

The effect of the present invention is not limited to the present embodiment and can be obtained in various other applications involving audio data input function. For example, the present invention may be applied to an independent music editing

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device (mixer) or a audio recording device (recorder), or any other device or system which requires effect operation for various kind of audio information. Also, with regards to the present embodiment, the karaoke system does not have to use a communication network via public telephone line, but may be of any other type, as far as it employs the effect control method explained above. Or, a more varied form of chorus function can be enjoyed by preparing a plurality of microphones for input voices and by setting different effect types for each voice input via each microphone. On the other hand, by setting the microphone effect control data (MECD) as identical with the corresponding accompaniment effect control data (BGECD), singing that matches the tone of the accompaniment music can be performed automatically.

Lastly, each sound note data for the sound information comprising the karaoke accompaniment music are stored in a single data block together with the corresponding accompaniment effect control data (BGECD) and microphone effect control data (MECD) in this embodiment, so that they could be read out in an associated manner. However, if an appropriate relation-setup is provided between these data, it is obviously possible to separately store the effect control data in other data blocks of the same storage means or in a completely different storage means.

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1. **An effect control device comprising;**
a storage means for storing a first audio information at a pre-determined first storage area;

a reading means for reading out one or more sets of audio information;

an audio information regeneration means for regenerating a set of sound based on said first audio information read out by said reading means;

an effector for applying various effects on given audio information;
one or more input means for inputting one or more sets of additional audio information to be synthesized with the regenerated said first audio information, into said effector, said effect control device further comprising;

an initial effect setting means for respectively setting the audio effect types which are to be applied to said one or more sets of additional audio information;

one or more additional storage areas associated with said first storage area, for respectively storing said audio effect types specified by said initial effect setting means, as additional effect control data;

said reading means for reading out said additional effect control data from said one or more additional storage areas, concurrently with reading out said first audio information from said first storage area of said storage means;

a transmitting means for transmitting each of said additional effect control data read out by said reading means directly to said effector; and

a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets

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of additional audio information from said one or more input means, and for selecting said specified effect types as temporary additional effect control data.

An effect control device as set forth in claim 1, wherein said temporary setting means comprises a clearing function for automatically clearing the settings of the audio effect types set by said temporary settings means, once the effect operation is performed based on said temporary additional effect control data.

An effect control device as set forth in claim 1, wherein said initial setting means and said temporary setting means comprise one single effect type switching function in common.

An effect control device as set forth in claim 3, wherein said effect type switching function is in form of a rotary switch by which each of the audio effects is uniquely represented and specified by one or more pre-determined codes.

An effect control device as set forth in claim 4, wherein said one or more pre-determined codes are represented by integers.

A karaoke system comprising;

a storage means for storing sound information for karaoke accompaniment in a pre-determined first storage area;

a reading means for reading out one or more sets of audio information including said sound information;

a sound regenerating means for regenerating the sound of karaoke accompaniment music based on the corresponding sound information read out by said reading means;

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an effector for applying various effects on one or more sets of voice information and/or said sound information;

one or more input means for inputting into said effector said one or more sets of voice information ~~by the~~ synthesized with said sound information for karaoke accompaniment music, said ^{to be} karaoke system further comprising;

an initial setting means for initially setting each of the audio effect types to be applied to said one or more sets of voice information input via said one or more input means; and

one or more additional storage areas associated with said first storage area, for respectively storing said audio effect types specified by said initial effect setting means, as voice effect control data;

said reading means for reading out said voice effect control data from said one or more additional storage areas concurrently with reading out said sound information from said first storage area in said storage means; and

a transmitting means for transmitting each of said voice effect control data read out by said reading means directly to said effector; and

a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets of voice information from said one or more input means, and for selecting the specified effect types as temporary voice effect control data.

7. A karaoke system as set forth in claim 6, wherein said temporary setting means comprises a clearing function for automatically clearing the settings of the audio effect types set by said temporary setting means, once the effect operation is performed based

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on said temporary voice effect control data.

8. A karaoke system as set forth in claim 6, wherein said initial setting means and said temporary setting means comprise one single effect type switching function in common.
9. A karaoke system as set forth in claim 8, wherein said effect type switching function is in form of a rotary switch by which each of the audio effects is uniquely represented and specified by one or more pre-determined codes.
10. A karaoke system as set forth in claim 9, wherein said one or more pre-determined codes are represented by integers.
11. An effect control device as set forth in claim 1, which comprises a pre-determined third storage area associated with said first storage area, for storing first effect control data which specify the audio effect types to be applied to said first audio information.
12. An effect control device as set forth in claim 1, wherein said storage means includes;

said first storage area for storing said first audio information, and

said one or more additional storage areas for storing said additional effect control data set for said one or more sets of additional audio information, respectively in different sectors of one single data block.
13. An effect control device as set forth in claim 11, wherein said storage means includes;

said first storage area for storing said first audio information, and

said third storage area for storing said first effect control data, respectively in two different sectors of one single data block.

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14. An effect control device as set forth in claim 11, wherein said storage means includes;

said first storage area for storing said first audio information;

said one or more additional storage areas for storing said additional effect control data set for said one or more sets of additional audio information; and

said third storage area for storing said first effect control data, respectively in different sectors of one single data block.
15. An effect control device as set forth in claim 2, wherein said initial setting means and said temporary setting means comprise one single effect type switching function in common.
16. A karaoke system as set forth in claim 6, comprising a pre-determined third storage area for storing accompaniment effect control data which specify the audio effect types to be applied to said sound information ~~from~~ ^{for} karaoke accompaniment music.
17. A karaoke system as set forth in claim 6, wherein said storage means includes;

said first storage area for storing said sound information for karaoke accompaniment music, and

said one or more additional storage areas for storing said voice effect control data specified for said one or more sets of additional audio information, respectively in different sections of one single data block.
18. A karaoke system as set forth in claim 16, wherein said storage means includes;

said first storage area for storing said sound information for karaoke accompaniment

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music, and

said third storage area for storing said accompaniment effect control data, respectively in two different sectors of one single data block.

19. A karaoke system as set forth in claim 16, wherein said storage means includes;

said first storage area, for storing said sound information for karaoke accompaniment music,

said one or more additional storage areas for storing said voice effect control data set for said one or more sets of voice information input via said one or more input means, and

said third storage area, for storing said accompaniment effect control data for specifying the audio effect types to be applied to said sound information for karaoke accompaniment music, respectively in different sectors of one single data block.

20. An apparatus for applying one or more audio effects to a stored audio input and a spontaneous audio input, combining the two audio inputs with effects, and outputting the audio inputs with effects comprising:

a voice receiving means for receiving a voice input;

a storage unit for storing a plurality of audio information, each said audio information comprising:

a first sector having music regeneration information,

a plurality of sectors having music effect control information associated with said music regeneration information, and

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a plurality of sectors having voice effect control information corresponding with said music effect control information;

user indicator means for indicating one of said music regeneration information to be retrieved from said storage unit, a default effect type, and a current effect type;

reading means for reading said user indicator means and retrieving said indicated music regeneration information from said storage unit, and further retrieving said music effect control information corresponding with said indicated default effect type and said voice effect control information corresponding to said current effect type;

music regeneration means for receiving said music regeneration information from said reading means and regenerating an audio signal therefrom;

music effect applying means for receiving said music effect control information from said reading means and said audio signal from said music regeneration means, and for applying an effect corresponding to said music effect control information to said audio signal;

voice effect applying means for receiving said voice input from said voice receiving means and said voice effect control information from said reading means, and for applying an effect corresponding to said voice effect control information to said voice input;

control means for transmitting said music effect control information corresponding to said default effect from said reading means to said music effect applying means, and for transmitting voice effect control information corresponding to said current effect type from said reading means to said voice effect applying means; and

with effect applied from said voice effect applying means, synthesizing the audio signal

output means for receiving said audio signal with effect applied from said music effect applying means and said voice input

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and voice input, and outputting the synthesized audio signal and voice input.

21. An apparatus for storing and applying one or more audio effects as recited in Claim 20 comprising a plurality of voice receiving means, said voice inputs from each of said plurality of voice receiving means being received by said voice effect applying means wherein a plurality of voice inputs can have the effect applied thereto.
22. An apparatus as recited in Claim 21 comprising a plurality of voice effect applying means wherein each voice input from said plurality of voice receiving means may have independent effects applied thereto by one of said plurality of effect applying means.
23. An apparatus for storing and applying one or more audio effects as recited in Claim 20 wherein said voice effect applying means and said music effect applying means are performed by a single effector unit.
24. An apparatus for applying one or more audio effects to a stored audio input and a spontaneous audio input as recited in Claim 20 wherein said audio information further comprises a sector having video information associated with said music regeneration information, said reading means reading said video information, said apparatus further comprising:

video display means for generating video images received from said reading means and displaying said video images; and

wherein said control means further controls the transmission of said video information from said reading means to said video display means to coordinate said video images with said audio signal.



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initial setting means, for said one or more sets of voice information from said one or more input means, and for selecting the specified effect types as temporary voice effect control data.

18. A karaoke system as set forth in claim 17, wherein said temporary setting means comprises an clearing function for automatically clearing the settings of the audio effect types set by said temporary setting means, once the effect operation is performed based on said temporary voice effect control data.

19. A karaoke system as set forth in claim 17, wherein said initial setting means and said temporary setting means comprise one single effect type switching function in common.

20. A karaoke system as set forth in claim 19, wherein said effect type switching function is in form of a rotary switch by which each of the audio effects is uniquely represented and specified by one or more pre-determined codes.

21. A karaoke system as set forth in claim 20, wherein said one or more pre-determined codes are represented by integers.

22. An effect control device as set forth in claim 3, comprising;
a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said





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initial setting means, for said one or more sets of additional audio information from said one or more input means, and for selecting said specified effect types as temporary additional effect control data.

23. An effect control device as set forth in claim 4, comprising;

a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets of additional audio information from said one or more input means, and for selecting said specified effect types as temporary additional effect control data.

24. An effect control device as set forth in claim 5, comprising;

a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets of additional audio information from said one or more input means, and for selecting said specified effect types as temporary additional effect control data.

25. An effect control device as set forth in claim 6, comprising;

a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets of additional

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audio information from said one or more input means, and for selecting said specified effect types as temporary additional effect control data.

26. An effect control device as set forth in claim 8, wherein said initial setting means and said temporary setting means comprise one single effect type switching function in common.

27. A karaoke system as set forth in claim 13, comprising;
a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets of voice information from said one or more input means, and for selecting the specified effect types as temporary voice effect control data.

28. A karaoke system as set forth in claim 14, comprising;
a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets of voice information from said one or more input means, and for selecting the specified effect types as temporary voice effect control data.

29. A karaoke system as set forth in claim 15, comprising;
a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said

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initial setting means, for said one or more sets of voice information from said one or more input means, and for selecting the specified effect types as temporary voice effect control data.

30. A karaoke system as set forth in claim 16, comprising;

a temporary setting means for temporarily specifying the audio effect types, different from said audio effect types set by said initial setting means, for said one or more sets of voice information from said one or more input means, and for selecting the specified effect types as temporary voice effect control data.

31. An effect control method comprising the steps of:

setting an audio effect type to be applied to a voice information which is to be synthesized with a music information stored in a first storage area, as an audio effect type associated with the music information;

storing in a second storage area an information about the relation of said music information type and its associated audio effect type, as an audio effect control information associated with the music information;

reading out said music information from said first storage area and its associated audio effect control information from said second area at the same time when reading out the music information is demanded for regenerating it;

transmitting the read out audio effect control information





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to an effector for applying said audio effect type associated with said music information to a voice information which is to be synthesized with the music information, based on the audio effect control information.

32. An effect control device comprising:

a storage means for storing a music information in a predetermined first storage area;

a reading means for reading out a music information;

a music information regenerating means for regenerating a music information read out by said reading means;

an effector for applying various effect types on given music information and voice information;

a voice input means for inputting voice information to be synthesized with the regenerated music information by said regenerating means, into said effector,

said effect control device further comprising:

an initial setting means for setting an audio effect type to be applied to said voice information;

a second storage area associated with said first storage area, for storing an information about said audio effect type specified by said initial setting means, as an audio effect control information;

said reading means for reading out said audio effect control information from said second storage area,

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concurrently with reading out said music information from said first storage area of said storage means; and

a transmitting means for transmitting said audio effect control information read out by said reading means directly to said effector.

33. An apparatus for applying one or more audio effects to a stored audio input and a spontaneous audio input, combining the two audio inputs with effects, and outputting the audio inputs with effects comprising:

a voice receiving means for receiving a voice input;

a storage unit for storing a plurality of audio information, each said audio information comprising:

a first sector having music regeneration information, a plurality of sectors having music effect control information associated with said music regeneration information, and

a plurality of sectors having voice effect control information corresponding with said music effect control information;

user indicator means for indicating one of said music regeneration information to be retrieved from said storage unit, a default effect type, and a current effect type;

reading means for reading said user indicator means and retrieving said indicated music regeneration information from said

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storage unit, and further retrieving said music effect control information corresponding with said indicated default effect type and said voice effect control information corresponding to said current effect type;

music regeneration means for receiving said music regeneration information from said reading means and regenerating an audio signal therefrom;

music effect applying means for receiving said music effect control information from said reading means and said audio signal from said music regeneration means, and for applying an effect corresponding to said music effect control information to said audio signal;

voice effect applying means for receiving said voice input from said voice receiving means and said voice effect control information from said reading means, and for applying an effect corresponding to said voice effect control information to said voice input;

control means for transmitting said music effect control information corresponding to said default effect from said reading means to said music effect applying means, and for transmitting voice effect control information corresponding to said current effect type from said reading means to said voice effect applying means; and

output means for receiving said audio signal with effect applied from said music effect applying means and said voice input



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with effect applied from said voice effect applying means, synthesizing the audio signal and voice input, and outputting the synthesized audio signal and voice input.

34. An apparatus for storing and applying one or more audio effects as recited in Claim 33 comprising a plurality of voice receiving means, said voice inputs from each of said plurality of voice receiving means being received by said voice effect applying means wherein a plurality of voice inputs can have the effect applied thereto.

35. An apparatus as recited in Claim 34 comprising a plurality of voice effect applying means wherein each voice input from said plurality of voice receiving means may have independent effects applied thereto by one of said plurality of effect applying means.

36. An apparatus for storing and applying one or more audio effects as recited in Claim 33 wherein said voice effect applying means and said music effect applying means are performed by a single effector unit.

37. An apparatus for applying one or more audio effects to a stored audio input and a spontaneous audio input as recited in Claim 33 wherein said audio information further comprises a sector having video information associated with said music

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regeneration information, said reading means reading said video information, said apparatus further comprising:

video display means for generating video images received from said reading means and displaying said video images; and wherein said control means further controls the transmission of said video information from said reading means to said video display means to coordinate said video images with said audio signal.

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