

DESCRIPTION

AUDIO GENERATION DEVICE, AUDIO GENERATION SYSTEM, AND COMPUTER PROGRAM

Technical Field

[0001]

The present invention relates to an audio generation device, an audio generation system, and a computer program.

Background Art

[0002]

In today's information communication society, there have been proposed various audio conversion methods for audio-outputting input text information in a predetermined language system, unique expression generation methods for identifying specific information as the specific information, and the like.

[0003]

Patent Literature 1 proposes an audio generation device, an audio generation method, and a program by the inventor. According to Patent Literature 1, a musical phrase having a linguistic meaning of Japanese can be generated from text data in Japanese.

Citation List

Patent Literature

[0004]

Patent Literature 1: JP 2014-224976 A

Summary of Invention

Technical Problem

[0005]

In the invention proposed in Patent Literature 1, since two note codes are extracted for one input Japanese character to generate audio data, a music phrase related to the audio data is flat without rhythmic changes as a whole. Therefore, it has been a problem to generate a musical phrase having a predetermined rhythm.

[0006]

An object of the present invention is to generate an audio phrase with rhythmic changes with respect to input text data, symbol data, and a combination thereof, and provide various content items by associating the audio phrase.

Solution to Problem

[0007]

[1]

An audio generation device that generates corresponding audio data when content data is input,

the audio generation device having the following

configurations.

(1) Packet data constructed with the following configuration is stored in a storage means.

(a) A sound information storage area including $(n+2)$ ($n \geq 1$) sound information storage slots with one beat of $(n+2)$ sounds as one unit.

(b) A first pitch attribute code corresponding to a pitch name code constituting one sound is set in a first sound information storage slot.

(c) A second pitch attribute code corresponding to a pitch name code constituting less than $(n+2)$ multiple sounds is set in the sound information storage slot under the following conditions.

(c1) Set in the first sound information storage slot.

(c2) Set in a second or third sound information storage slot in a case where $n=1$.

(c3) Set in one sound information storage slot selected from among even-numbered, odd-numbered, and $(n+2)$ -th sound information storage slots in a case where $n \geq 2$.

(c4) Further set in a combination of a plurality of the sound information storage slots selected from among even-numbered, odd-numbered, and $(n+2)$ -th sound information storage slots in a case where $n \geq 2$.

(d) A third pitch attribute code corresponding to a pitch name code constituting $(n+2)$ sounds is set in all the

sound information storage slots.

(2) A sound generation means that generates audio data with one beat of $(n+2)$ sounds corresponding to the input content data as one unit according to the following procedure.

(a) Performing a process of generating the packet data by associating the input content data with at least one of the first pitch attribute code, the second pitch attribute code, and the third pitch attribute code.

(b) Performing a process of generating the audio data composed of the pitch name code corresponding to the packet data.

[0008]

[2]

An audio generation system including: an audio generation device that generates corresponding audio data when content data is input; and a reception terminal that receives the audio data from the audio generation device, the audio generation system having the following configurations.

(1) The audio generation device includes a storage means that stores packet data constructed with the following configuration.

(a) A sound information storage area including $(n+2)$ ($n \geq 1$) sound information storage slots with one beat of $(n+2)$

sounds as one unit.

(b) A first pitch attribute code corresponding to a pitch name code constituting one sound is set in a first sound information storage slot.

(c) A second pitch attribute code corresponding to a pitch name code constituting less than $(n+2)$ multiple sounds is set in the sound information storage slot under the following conditions.

(c1) Set in the first sound information storage slot.

(c2) Set in a second or third sound information storage slot in a case where $n=1$.

(c3) Set in one sound information storage slot selected from among even-numbered, odd-numbered, and $(n+2)$ -th sound information storage slots in a case where $n \geq 2$.

(c4) Further set in a combination of a plurality of the sound information storage slots selected from among even-numbered, odd-numbered, and $(n+2)$ -th sound information storage slots in a case where $n \geq 2$.

(d) A third pitch attribute code corresponding to a pitch name code constituting $(n+2)$ sounds is set in all the sound information storage slots.

(2) The audio generation device includes a sound generation means that generates audio data with one beat of $(n+2)$ sounds corresponding to the input content data as one unit according to the following procedure.

(a) Performing a process of generating the packet data by associating the input content data with at least one of the first pitch attribute code, the second pitch attribute code, and the third pitch attribute code.

(b) Performing a process of generating the audio data composed of the pitch name code corresponding to the packet data.

(3) The audio generation device includes an audio data output means that outputs the generated audio data.

(4) The reception terminal includes a data conversion means that converts the generated audio data into the content data.

Advantageous Effects of Invention

[0009]

According to the present invention, it is possible to generate an audio phrase with rhythmic changes with respect to input text data, symbol data, and a combination thereof, and provide various content data items by associating the audio phrase.

Brief Description of Drawings

[0010]

Fig. 1(a) is a diagram illustrating an example of a hardware configuration of a reception terminal constituting

an audio generation device and an audio generation system of the present embodiment, Fig. 1(b) is a diagram illustrating an example of a software configuration of the audio generation device of the present embodiment, and Fig. 1(c) is a diagram illustrating an example of a software configuration of a reception terminal constituting the audio generation system of the present embodiment.

Fig. 2(a) is a diagram illustrating an example of a sound information storage area, Fig. 2(b) is a diagram illustrating an example of a correspondence relationship between a pitch name code and a conversion code, Fig. 2(c) is a diagram illustrating an example of packet data, and Fig. 2(d) is a diagram illustrating an example of audio data.

Fig. 3(a) is a diagram illustrating an example of a one-sound matrix, Fig. 3(b) is a diagram illustrating an example of a two-sound matrix, and Fig. 3(c) is a diagram illustrating an example of a three-sound matrix.

Fig. 4(a) is a diagram illustrating another example of a sound information storage area, Fig. 4(b) is a diagram illustrating an example of a correspondence relationship between a pitch name code and a conversion code, Fig. 4(c) is a diagram illustrating another example of packet data, and Fig. 4(d) is a diagram illustrating another example of audio data.

Fig. 5(a) is a diagram illustrating an example of a one-sound matrix, Fig. 5(b) is a diagram illustrating an example of a two-sound matrix, Fig. 5(c) is a diagram illustrating an example of a three-sound matrix, and Fig. 5(d) is a diagram illustrating an example of a four-sound matrix.

Fig. 6(a) is a diagram illustrating another example of a sound information storage area, and Fig. 6(b) is a diagram illustrating another example of a correspondence relationship between a pitch name code and a conversion code.

Fig. 7 is a diagram illustrating types of arrangement patterns of pitch attribute codes.

Fig. 8 is a diagram illustrating a configuration of a sound ID.

Fig. 9 is a diagram illustrating an example of a hierarchical structure of packet data.

Fig. 10 is a diagram illustrating an example of description for generating audio data from input data.

Fig. 11 is a diagram illustrating an example of description for generating audio data from input data in a hierarchical structure of packet data.

Fig. 12 is a diagram illustrating an example of description for generating audio data from input data, following Fig. 11.

Fig. 13 is a diagram illustrating an example of a hierarchical structure of content data.

Fig. 14 is a flowchart illustrating an example of a process by the audio generation system of the present embodiment.

Description of Embodiments

[0011]

Hereinafter, an example of an embodiment of the present invention will be described with reference to the accompanying drawings. An audio generation device according to an aspect of the present embodiment is an instrument or a server that generates audio data corresponding to content data (hereinafter, it may be referred to as "input data") including text data, symbol data, image data, video data, or a combination thereof.

[0012]

The following modes can be exemplified as an audio generation process by the audio generation device of the present embodiment.

- Mode in which the audio generation device of the present embodiment receives input data and generates and outputs corresponding audio data

- Mode in which the audio generation device of the present embodiment receives input data, generates

corresponding audio data, and transmits and outputs the audio data to an external output instrument or device that is a reception terminal

- Mode in which the audio generation device of the present embodiment receives input data from an external input instrument or device and generates and outputs corresponding audio data

- Mode in which the audio generation device of the present embodiment receives input data from an external input instrument or device, generates corresponding audio data, and transmits and outputs the audio data to an external output instrument or apparatus that is a reception terminal

In the present embodiment, description will be given on the assumption that the text data includes data of Japanese kana characters and characters of other linguistic systems, and the symbol data includes data of hazy points, semi-hazy points, long sounds, punctuation marks, numbers, and other symbols.

[0013]

In addition, the present embodiment includes a computer program that causes a computer to function as the audio generation system described in the present embodiment.

[0014]

Application software related to an audio generation

service by an audio generation system of the present embodiment is installed in the audio generation device and the reception terminal described in the present embodiment. By executing this application software, it is possible to generate and output audio data corresponding to input data and perform a conversion process from the audio data to the input data.

[0015]

[Audio Generation Device]

An audio generation device 1 of the present embodiment is a terminal instrument such as a personal computer, a smartphone, or a tablet, an electronic instrument that can handle MIDI data or audio data, such as a music sequencer, a MIDI controller, a synthesizer, or a music workstation, or a server device.

[0016]

As a hardware configuration, as illustrated in Fig. 1(a), there are provided a CPU 2 that executes various computer programs and performs an arithmetic process, a memory 3 that stores various data such as a RAM and a ROM, an auxiliary storage device 4 such as a built-in storage, a communication module 5 that transmits and receives various kinds of information to and from an external input instrument and output instrument via a communication means such as a wired connection such as an MIDI cable or a

network connection by a wireless communication network defined in an Internet communication network or a wireless communication standard, an input device 6 such as a mouse, a keyboard, and a touch panel, and an output device 7 such as a liquid crystal display and a speaker.

[0017]

In addition, as illustrated in Fig. 1(b), the audio generation device 1 includes, as a software configuration, a data input unit 101, a data receiving unit 102, a storage unit 103, an audio data generation unit 105, and an audio data output unit 106. The information process by these processing units is controlled by cooperation of the CPU 2, the memory 3, and the like.

[0018]

For example, when a data inputter such as a service provider uses the audio generation device 1 as the terminal instrument or the electronic instrument, the data input unit 101 displays an input window of the content data on the display screen and performs a process of receiving the input data.

[0019]

The data receiving unit 102 performs a process of receiving input data transmitted from the external input instrument or device described above. Note that the external input instrument or device is a terminal

instrument such as a personal computer, a smartphone, or a tablet, or an electronic instrument that can handle MIDI data or audio data such as a music sequencer, a MIDI controller, a synthesizer, or a music workstation.

[0020]

The storage unit 103 stores packet data 17. The packet data 17 of the present embodiment includes a sound information storage area including (n+2) ($n \geq 1$) sound information storage slots with one beat of (n+2) sounds as one unit. A configuration example of the packet data 17 will be described below.

[0021]

(Configuration Example 1 of Packet Data)

In the example of $n=1$ illustrated in Fig. 2, the packet data 17 includes a sound information storage area 9 including three sound information storage slots 10a, 10b, and 10c with one beat of three sounds as one unit.

[0022]

A one-sound matrix 11a as illustrated in Fig. 3(a) is set in the first sound information storage slot 10a.

[0023]

The one-sound matrix 11a is a matrix in which ten versions of conversion codes 12 corresponding to one sound can be set. As illustrated in Figs. 2(b), 2(c), and 3(a), ten versions of first pitch attribute codes (one pitch

attribute codes) 13 corresponding to one sound can be set in the first sound information storage slot 10a by using 10 kinds of conversion codes 12 from 0 to 9. Hereinafter, a rest code representing a rest is set in the sound information storage slot 10 in which the conversion code 12 is not set.

[0024]

A pitch name code 16 is associated with the first pitch attribute code 13. For example, as illustrated in Fig. 2(d), the pitch name code 16 representing the pitch name "do (C)" is associated with the first pitch attribute code 13 "0" set in the first sound information storage slot 10a.

[0025]

In the combination of the first sound information storage slot 10a and the second sound information storage slot 10b or the combination of the first sound information storage slot 10a and the third sound information storage slot 10c, a two-sound matrix 11b as illustrated in Fig. 3(b) is set.

[0026]

The two-sound matrix 11b is a matrix in which 200 versions of conversion codes 12 corresponding to two sounds can be set. As illustrated in Figs. 2(b), 2(c), and 3(b), 200 versions of second pitch attribute codes (two-pitch attribute codes) 14 corresponding to two sounds can be set

in the combination of the first sound information storage slot 10a and the second sound information storage slot 10b and the combination of the first sound information storage slot 10a and the third sound information storage slot 10c by using 10 kinds of conversion codes 12 from 0 to 9.

[0027]

A pitch name code 16 is associated with the second pitch attribute code 14. For example, as illustrated in Fig. 2(d), two pitch name codes 16 representing the pitch name "Mi-So (EG)" are associated with the second pitch attribute code 14 "24" set in the combination of the first sound information storage slot 10a and the second sound information storage slot 10b.

[0028]

In the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c, a three-sound matrix 11c as illustrated in Fig. 3(c) is set.

[0029]

The three-sound matrix 11c is a matrix in which 1000 versions of conversion codes 12 corresponding to three sounds can be set. As illustrated in Figs. 2(b), 2(c), and 3(c), 1000 versions of third pitch attribute codes (three-pitch attribute codes) 15 representing three sounds can be set in the combination of the first sound information

storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c by using 10 kinds of conversion codes 12 from 0 to 9.

[0030]

A pitch name code 16 is associated with the third pitch attribute code 15. For example, as illustrated in Fig. 2(d), three pitch name codes 16 representing the pitch name "Do-Re-La (CDA)" are associated with the third pitch attribute code 15 "015" set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c.

[0031]

The packet data 17 in which content data is associated with at least one of the first pitch attribute code 13, the second pitch attribute code 14, and the third pitch attribute code 15 is stored in the storage unit 103.

[0032]

From the above, when $n=1$, the packet data 17 is constructed with the following configuration, and 1210 types of content data can be set.

(a) A sound information storage area 9 including three sound information storage slots 10 with one beat of three sounds as one unit

(b) The first pitch attribute code 13 corresponding to

the pitch name code constituting one sound is set in the first sound information storage slot 10a.

(c) The second pitch attribute code 14 corresponding to the pitch name code constituting two sounds is set in the following sound information storage slots 10.

(c1) The first sound information storage slot 10a

(c2) The second sound information storage slot 10b or the third sound information storage slot 10c

(d) The third pitch attribute code 15 corresponding to the pitch name code constituting three sounds is set in the sound information storage slots 10a, 10b, and 10c.

[0033]

(Configuration Example 2 of Packet Data)

In the example of $n=2$ illustrated in Fig. 4, the packet data 17 includes a sound information storage area 9 including four sound information storage slots 10 with one beat of four sounds as one unit.

[0034]

A one-sound matrix 11a as illustrated in Fig. 5(a) is set in the first sound information storage slot 10a.

[0035]

The one-sound matrix 11a is a matrix in which ten versions of conversion codes 12 corresponding to one sound can be set. As illustrated in Figs. 4(b), 4(c), and 5(a), ten versions of first pitch attribute codes (one pitch

attribute codes) 13 corresponding to one sound can be set in the first sound information storage slot 10a by using 10 kinds of conversion codes 12 from 0 to 9.

[0036]

A pitch name code 16 is associated with the first pitch attribute code 13. For example, as illustrated in Fig. 4(d), the pitch name code 16 representing the pitch name "do (C)" is associated with the first pitch attribute code 13 "0" set in the first sound information storage slot 10a.

[0037]

A two-sound matrix 11b as illustrated in Fig. 5(b) is set in each of the combination of the first sound information storage slot 10a and the second sound information storage slot 10b, the combination of the first sound information storage slot 10a and the third sound information storage slot 10c, or the combination of the first sound information storage slot 10a and the fourth sound information storage slot 10d.

[0038]

The two-sound matrix 11b is a matrix in which 300 versions of conversion codes 12 corresponding to two sounds can be set. As illustrated in Figs. 4(b), 4(c), and 5(b), 300 versions of second pitch attribute codes (two-pitch attribute codes) 14a corresponding to two sounds can be set in the combination of the first sound information storage

slot 10a and the second sound information storage slot 10b, the combination of the first sound information storage slot 10a and the third sound information storage slot 10c, and the combination of the first sound information storage slot 10a and the fourth sound information storage slot 10d by using 10 kinds of conversion codes 12 from 0 to 9.

[0039]

A pitch name code 16 is associated with the second pitch attribute code 14a. For example, as illustrated in Fig. 4(d), two pitch name codes 16 representing the pitch name "Mi-So (EG)" are associated with the second pitch attribute code 14a "24" set in the combination of the first sound information storage slot 10a and the second sound information storage slot 10b.

[0040]

A three-sound matrix 11c as illustrated in Fig. 5(c) is set in each of the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c, the combination of the first sound information storage slot 10a, the third sound information storage slot 10c, and the fourth sound information storage slot 10d, or the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the fourth sound information storage slot 10d.

[0041]

The three-sound matrix 11c is a matrix in which 3000 versions of conversion codes 12 corresponding to three sounds can be set. For example, as illustrated in Figs. 4(b), 4(c), and 5(c), 3000 versions of second pitch attribute codes (three pitch attribute codes) 14b corresponding to three sounds can be set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c, the combination of the first sound information storage slot 10a, the third sound information storage slot 10c, and the fourth sound information storage slot 10d, and the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the fourth sound information storage slot 10d by using 10 kinds of conversion codes 12 from 0 to 9.

[0042]

A pitch name code 16 is associated with the second pitch attribute code 14b. For example, as illustrated in Fig. 4(d), three pitch name codes 16 representing the pitch name "Do-Re-La (CDA)" are associated with the second pitch attribute code 14b "015" set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound

information storage slot 10c.

[0043]

In the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, the third sound information storage slot 10c, and the fourth sound information storage slot 10d, a four-sound matrix 11d as illustrated in Fig. 5(d) is set.

[0044]

The four-sound matrix 11d is a matrix in which 10000 versions of conversion codes 12 corresponding to four sounds can be set. As illustrated in Figs. 4(b), 4(c), and 5(d), 10000 versions of third pitch attribute codes (4 pitch attribute codes) 15 corresponding to four sounds can be set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, the third sound information storage slot 10c, and the fourth sound information storage slot 10d by using 10 kinds of conversion codes 12 from 0 to 9.

[0045]

A pitch name code 16 is associated with the third pitch attribute code 15. For example, as illustrated in Fig. 4(d), four pitch name codes 16 representing the pitch name "Do-Re-La-Fa (CDAF)" are associated with the third pitch attribute code 15 "0153" set in the combination of the first sound information storage slot 10a, the second sound

information storage slot 10b, the third sound information storage slot 10c, and the fourth sound information storage slot 10d.

[0046]

The packet data 17 in which content data is associated with at least one of the first pitch attribute code 13, the second pitch attribute codes 14a and 14b, and the third pitch attribute code 15 is stored in the storage unit 103.

[0047]

From the above, in the case of $n=2$, the packet data 17 is constructed with the following configuration, and 13310 types of content data can be set.

(a) A sound information storage area 9 including four sound information storage slots 10 with one beat of four sounds as one unit

(b) The first pitch attribute code 13 corresponding to the pitch name code constituting one sound is set in the first sound information storage slot 10a.

(c) The second pitch attribute codes 14a and 14b corresponding to the pitch name codes constituting two sounds and three sounds are set in the following sound information storage slot 10.

(c1) The first sound information storage slot 10a

(c2) The second (even-numbered) sound information storage slot 10b or the third (odd-numbered) sound

information storage slot 10c

(c3) A plurality of sound information storage slots 10 selected from among the second (even-numbered) sound information storage slot 10b, the third (odd-numbered) sound information storage slot 10c, and the fourth ((n+2)-th) sound information storage slot 10d

(d) The third pitch attribute codes 15 corresponding to the pitch name codes constituting four sounds are set in the sound information storage slots 10a, 10b, 10c, and 10d.
[0048]

From the configuration example 1 and the configuration example 2 of the packet data, in the case of $n \geq 2$, the packet data 17 is constructed with the following configuration.

(a) A sound information storage area 9 including (n+2) sound information storage slots 10 with one beat of (n+2) sounds as one unit

(b) The first pitch attribute code 13 corresponding to the pitch name code constituting one sound is set in the first sound information storage slot 10a.

(c) The second pitch attribute codes 14 corresponding to pitch name codes constituting less than (n+2) sounds are set in the following sound information storage slot 10.

(c1) The first sound information storage slot 10a

(c2) One sound information storage slot 10 selected

from among the even-numbered sound information storage slot 10, the odd-numbered sound information storage slot 10, and the (n+2)-th sound information storage slot 10.

(c3) In addition to the above (c2), a combination of a plurality of sound information storage slots 10 selected from among the even-numbered sound information storage slot 10, the odd-numbered sound information storage slot 10, and the (n+2)-th sound information storage slot 10.

(d) The third pitch attribute codes 15 corresponding to the pitch name codes constituting the (n+2) sounds are set in all the sound information storage slots 10.

[0049]

(Configuration Example 3 of Packet Data)

In the example illustrated in Figs. 6 to 8, the packet data 17 includes a sound information storage area 9 including four sound information storage slots 10 with one beat of four sounds as one unit.

[0050]

A one-sound matrix 11a is set in the first sound information storage slot 10a.

[0051]

The one-sound matrix 11a is a matrix in which 25 versions of conversion codes 12 corresponding to one sound can be set. Specifically, 25 versions of first pitch attribute codes (one pitch attribute codes) 13

corresponding to one sound can be set in the first sound information storage slot 10a by using 25 kinds of conversion codes 12 illustrated in Fig. 6(b).

[0052]

In addition, as illustrated in Fig. 7, a pattern code 20 "a" is assigned to the packet data 17 to which the first pitch attribute code 13 is set. A pattern code 20 represents a setting pattern of the first pitch attribute code 13, the second pitch attribute code 14, and the third pitch attribute code 15 to the four sound information storage slots 10.

[0053]

Since the first pitch attribute code 13 is set in the first sound information storage slot 10a as illustrated in Fig. 7, there is one kind of pattern code 20.

[0054]

A pitch name code 16 is associated with the first pitch attribute code 13. For example, as illustrated in Figs. 6(b) and 7, the pitch name code 16 representing the pitch name "do (C)" is associated with the first pitch attribute code 13 "1" set in the first sound information storage slot 10a.

[0055]

A two-sound matrix 11b is set in the combination of the first sound information storage slot 10a and the second

sound information storage slot 10b, the combination of the first sound information storage slot 10a and the third sound information storage slot 10c, or the combination of the first sound information storage slot 10a and the fourth sound information storage slot 10d.

[0056]

The two-sound matrix 11b is a matrix in which 1875 versions of conversion codes 12 corresponding to two sounds can be set. Specifically, 1875 (625×3) versions of second pitch attribute codes (two-pitch attribute codes) 14a corresponding to two sounds can be set in the combination of the first sound information storage slot 10a and the second sound information storage slot 10b, the combination of the first sound information storage slot 10a and the third sound information storage slot 10c, and the combination of the first sound information storage slot 10a and the fourth sound information storage slot 10d by using 25 kinds of conversion codes 12 illustrated in Fig. 6(b).

[0057]

As illustrated in Fig. 7, any one of pattern codes 20 "b", "c", and "d" is assigned to the packet data 17 to which the second pitch attribute code 14a is set.

[0058]

As illustrated in Fig. 7, since the second pitch attribute code 14a is set to the combination of the first

sound information storage slot 10a and the second sound information storage slot 10b, the combination of the first sound information storage slot 10a and the third sound information storage slot 10c, or the combination of the first sound information storage slot 10a and the fourth sound information storage slot 10d, there are three kinds of pattern codes 20.

[0059]

A pitch name code 16 is associated with the second pitch attribute code 14a. For example, as illustrated in Figs. 6(b) and 7, two pitch name codes 16 representing the pitch name "Do-Do# (CC#)" are associated with the second pitch attribute code 14a "12" set in the combination of the first sound information storage slot 10a and the second sound information storage slot 10b.

[0060]

A three-sound matrix 11c is set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c, the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the fourth sound information storage slot 10d, or the combination of the first sound information storage slot 10a, the third sound information storage slot 10c, and the fourth sound

information storage slot 10d.

[0061]

The three-sound matrix 11c is a matrix in which 46875 versions of conversion codes 12 corresponding to three sounds can be set. Specifically, 46875(15625×3) versions of second pitch attribute codes (three pitch attribute codes) 14b corresponding to three sounds can be set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c, the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the fourth sound information storage slot 10d, and the combination of the first sound information storage slot 10a, the third sound information storage slot 10c, and the fourth sound information storage slot 10d by using 25 kinds of conversion codes 12 illustrated in Fig. 6(b).

[0062]

As illustrated in Fig. 7, any one of pattern codes 20 "e", "f", and "g" is assigned to the packet data 17 to which the second pitch attribute code 14b is set.

[0063]

As illustrated in Fig. 7, since the second pitch attribute code 14b is set in the combination of the first sound information storage slot 10a, the second sound

information storage slot 10b, and the third sound information storage slot 10c, the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the fourth sound information storage slot 10d, or the combination of the first sound information storage slot 10a, the third sound information storage slot 10c, and the fourth sound information storage slot 10d, there are three kinds of pattern codes 20.

[0064]

A pitch name code 16 is associated with the second pitch attribute code 14b. For example, as illustrated in Figs. 6(b) and 7, three pitch name codes 16 representing the pitch name "Do-Do[#]-Re (CC[#]D)" are associated with the second pitch attribute code 14b "123" set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c.

[0065]

A four-sound matrix 11d is set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, the third sound information storage slot 10c, and the fourth sound information storage slot 10d.

[0066]

The four-sound matrix 11d is a matrix in which 390625 versions of conversion codes 12 corresponding to four sounds can be set. Specifically, 390625 versions of third pitch attribute codes (4 pitch attribute codes) 15 corresponding to four sounds can be set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, the third sound information storage slot 10c, and the fourth sound information storage slot 10d by using 25 kinds of conversion codes 12 illustrated in Fig. 6(b).

[0067]

A pitch name code 16 is associated with the third pitch attribute code 15. For example, as illustrated in Figs. 6(b) and 7, four pitch name codes 16 representing the pitch name "Do-Do#-Re-Re# (CC#DD#" are associated with the third pitch attribute code 15 "1234" set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, the third sound information storage slot 10c, and the fourth sound information storage slot 10d.

[0068]

In addition, as illustrated in Fig. 7, a pattern code 20 "h" is assigned to the packet data 17 to which the third pitch attribute code 15 is set.

[0069]

As illustrated in Fig. 7, since the third pitch attribute code 15 is set in the combination of the first sound information storage slot 10a, the second sound information storage slot 10b, the third sound information storage slot 10c, and the fourth sound information storage slot 10d, there is one kind of pattern code 20.

[0070]

The packet data 17 in which content data is associated with at least one of the first pitch attribute code 13, the second pitch attribute codes 14a and 14b, and the third pitch attribute code 15 is stored in the storage unit 103. In the packet data 17 of this configuration example, 439400 types of content data can be set.

[0071]

Furthermore, in this configuration example, a phrase code 21 is assigned to the combination of the pattern code 20 and the first pitch attribute code 13, the combination of the pattern code 20 and the second pitch attribute codes 14a and 14b, or the combination of the pattern code 20 and the third pitch attribute code 15, and a plurality of phrase codes 21 is set as the sound ID 22.

[0072]

In the example illustrated in Fig. 8, three phrase codes 21 are set as sound IDs 22. As a result, a specific melody in which the number of phrase codes 21 and the pitch

name code 16 are fixed can be set as the sound ID 22.

[0073]

(Configuration Example 4 of Packet Data)

In this configuration example, an audio information storage area related to another packet data is set in the sound information storage area related to the packet data described in the first to third configuration examples.

[0074]

In the example illustrated in Fig. 9, three pieces of packet data 17a, 17b, and 17c including the sound information storage area 9 in which the one-sound matrix 11a, the two-sound matrix 11b, and the three-sound matrix 11c are set are hierarchized. In Fig. 9, the following hierarchical structure is formed.

- A sound information storage area 9b related to the packet data 17b is set in each of the sound information storage slots 10 of the sound information storage area 9a related to the packet data 17a.

- A sound information storage area 9c related to the packet data 17c is set in each of the sound information storage slots 10 of the sound information storage area 9b related to the packet data 17b.

[0075]

With such a configuration, it is possible to tree information by melodies and index information.

[0076]

If the same effect as described above can be obtained, the four pieces of packet data 17a, 17b, 17c, and 17d including the sound information storage area 9 in which the one-sound matrix 11a, the two-sound matrix 11b, the three-sound matrix 11c, and the four-sound matrix 11d are set may be hierarchized. In this case, the following hierarchical structure is formed.

- A sound information storage area 9b related to the packet data 17b is set in each of the sound information storage slots 10 of the sound information storage area 9a related to the packet data 17a.

- A sound information storage area 9c related to the packet data 17c is set in each of the sound information storage slots 10 of the sound information storage area 9b related to the packet data 17b.

- A sound information storage area 9d related to the packet data 17d is set in each of the sound information storage slots 10 of the sound information storage area 9c related to the packet data 17c.

[0077]

The audio data generation unit 105 performs a process of generating audio data corresponding to the input data. In the present embodiment, audio data is generated by processing input data as follows.

[0078]

(1) When the packet data 17 includes the one-sound matrix 11a, the two-sound matrix 11b, and the three-sound matrix 11c described in the configuration example 1 of the packet data, the input data is associated with at least one of the first pitch attribute code 13, the second pitch attribute code 14, and the third pitch attribute code 15.

[0079]

For example, as illustrated in Fig. 10, in a case where text data "Thank you" is input, the following processes are performed.

[0080]

(a1) Text data "T", "n", and "o" are respectively allocated to the first sound information storage slot 10a of the packet data 17, and are associated with the first pitch attribute codes 13 "0", "6", and "2" corresponding to one sound.

[0081]

(a2) Text data "h", "k", and "u" are respectively allocated to the first sound information storage slot 10a and the second sound information storage slot 10b of the packet data 17, and are associated with the second pitch attribute codes 14 "12", "78", and "34" corresponding to two sounds.

[0082]

(a3) Text data "a" and "y" are respectively allocated to the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c of the packet data 17, and are associated with third pitch attribute codes 15 "345" and "901" corresponding to three sounds.

In addition to the above, the following processes can be performed.

[0083]

(b1) First pitch attribute codes 13 "0", "6", and "2" corresponding to one sound are set in the first sound information storage slot 10a of the first, fourth, and seventh packet data 17, respectively.

[0084]

(b2) Second pitch attribute codes 14 "12", "78", and "34" corresponding to two sounds are set in the first sound information storage slot 10a and the second sound information storage slot 10b of the second, fifth, and eighth packet data 17, respectively.

[0085]

(b3) Third pitch attribute codes 15 "345" and "901" corresponding to three sounds are set in the first sound information storage slot 10a, the second sound information storage slot 10b, and the third sound information storage slot 10c of the third and sixth packet data 17,

respectively.

[0086]

(b4) "Thank you" is associated with the combination "0 12 345 6 78 901 2 34" of the first pitch attribute code 13, the second pitch attribute code 14, and the third pitch attribute code 15.

[0087]

The audio data generation unit 105 performs a process of generating one or a plurality of audio data including the associated pitch attribute code.

[0088]

For example, as illustrated in Figs. 2(b) and 10, a process of generating the audio data 19 of eight phrases with one beat of three sounds configured by a pitch name code 16 representing "C (Do)", "B (Ti)", and "E (Mi)" corresponding to the first pitch attribute codes 13 "0", "6", and "2", "DE (Re)", "C2D2 (Do2-Re2)", and "FG (Fa-So)" corresponding to the second pitch attribute codes 14 "12", "78", and "34", and "FGA (Fa-So-La)" and "E2CD (Mi2-Do-Re)" corresponding to the third pitch attribute codes 15 "345" and "901" is performed.

[0089]

(2) When the packet data 17 includes the one-sound matrix 11a, the two-sound matrix 11b, the three-sound matrix 11c, and the four-sound matrix 11d described in the

configuration example 3 of the packet data, and the audio information storage area related to another packet data is set in each of the sound information storage slots 10 of the sound information storage area related to the packet data described in the configuration example 4 of the packet data, the input data is associated with at least one of the first pitch attribute code 13, the second pitch attribute code 14, and the third pitch attribute code 15 of the hierarchized sound information storage area.

[0090]

In the example illustrated in Fig. 11, two pieces of packet data 17a and 17b including the sound information storage area 9 in which the one-sound matrix 11a, the two-sound matrix 11b, the three-sound matrix 11c, and the four-sound matrix 11d are set are hierarchized. The sound information storage area 9b related to the packet data 17b in the second layer is set in the sound information storage slot 10a of the sound information storage area 9a related to the packet data 17a in the first layer.

[0091]

In addition, pattern codes 20 "g", "b", and "h" and phrase codes 21 "g359", "b13", and "hKMNW" illustrated in Fig. 7 are assigned to each packet data 17a in the first layer, and three phrase codes 21 are set as sound IDs 22. Moreover, a pattern code 20 "d" and a phrase code 21 "d4P"

illustrated in Fig. 7 are assigned to the packet data 17b in the second layer.

[0092]

In this case, for example, when an address of a predetermined website including a combination of romaji and a symbol or an address of a link destination to a product is input, the following processes are performed.

[0093]

(a1) In the address of the website, a portion of text data "www." is allocated to the first sound information storage slot 10a, the third sound information storage slot 10c, and the fourth sound information storage slot 10d of the first packet data 17a in the first layer, and is associated with a second pitch attribute code 14b "359" corresponding to three sounds.

[0094]

(a2) In the address of the website, the portion of the text data "XYZ." is allocated to the first sound information storage slot 10a and the second sound information storage slot 10b of the second packet data 17a in the first layer and is associated with a second pitch attribute code 14a "13" corresponding to two sounds.

[0095]

(a3) The portion of the text data "co.jp" in the address of the website is allocated to the first sound

information storage slot 10a, the second sound information storage slot 10b, the third sound information storage slot 10c, and the fourth sound information storage slot 10d of the third packet data 17a in the first layer, and is associated with a third pitch attribute code 15 "KMNW" corresponding to four sounds.

[0096]

(a4) In the address of the page of the product information to be the link destination from an HP, the portion of the text data "/pro" is allocated to the first sound information storage slot 10a and the fourth sound information storage slot 10d of the packet data 17b in the second layer and is associated with a second pitch attribute code 14a "4P" corresponding to two sounds.

In addition to the above, the following processes can be performed.

[0097]

(b1) The address "www.XYZ.co.jp" of the website is associated with the combination "359 13 KMNW" of the second pitch attribute codes 14a and 14b and the third pitch attribute code 15 in the first layer.

[0098]

(b2) The second pitch attribute code 14a "4P" in the second layer is associated with a portion of text data "/pro" in the address on the page of the product

information.

[0099]

The audio data generation unit 105 performs a process of generating one or a plurality of audio data including the associated pitch attribute code.

[0100]

For example, as illustrated in Figs. 6(b) and 11, a process of generating audio data 19a of three phrases with one beat of four sounds including "DEG# (Re-Mi-So#)" corresponding to the second pitch attribute code 14b "359", "CD (Do-Re)" corresponding to the second pitch attribute code 14a "13", and a pitch name code 16 representing "ABC2A2 (La-Ti-Do2-La2)" corresponding to the third pitch attribute code 15 "KMNW", and "D#D2 (Re#-Re2)" corresponding to the second pitch attribute code 14a "4P" is performed.

[0101]

In the example of Fig. 11, an HP of a certain service provider is represented by audio data 19a including packet data 17a of three phrases with one beat of four sounds, and this is fixed as a sound ID 22. In addition, the page of the product information to be linked to is represented by the audio data 19b including the packet data 17b of one phrase with one beat of four sounds, and is associated with the sound ID 22.

[0102]

Therefore, as illustrated in Fig. 13, audio data 19 evoking an HP of a certain service provider XYZ is set as a sound ID 22, and audio data 19 representing various pages to be linked to from the HP is set as a phrase code 21, so that information can be hierarchized by audio. Furthermore, by setting the audio data 19 as the sound ID 22, a domain of sound for identifying a specific person is assigned.

[0103]

The audio data output unit 106 performs a process of outputting the audio data 19 generated by the audio data generation unit 105 by audio. Note that the input data can also be displayed on the display screen when the audio data 19 is output.

[0104]

[Reception Terminal]

The reception terminal 8 of the present embodiment is a terminal instrument such as a personal computer, a smartphone, or a tablet.

[0105]

As a hardware configuration, as illustrated in Fig. 1(a), there are provided a CPU 2 that executes various computer programs and performs an arithmetic process, a memory 3 that stores various data such as a RAM and a ROM,

an auxiliary storage device 4 such as a built-in storage, a communication module 5 that transmits and receives various kinds of information to and from an external audio generation device 1 via a communication means such as an Internet communication network or a network connection by a wireless communication network defined in a wireless communication standard, an input device 6 such as a mouse, a keyboard, a touch panel, and a microphone, and an output device 7 such as a liquid crystal display and a speaker.

[0106]

In addition, as illustrated in Fig. 1(c), the reception terminal 8 includes a data receiving unit 801, a storage unit 802, and a data conversion unit 803 as a software configuration. The information process by these processing units is controlled by cooperation of the CPU 2, the memory 3, and the like.

[0107]

The data receiving unit 801 performs a process of receiving the audio data 19 output from the audio generation device 1.

[0108]

The storage unit 802 stores packet data 17. Since the configuration of the packet data 17 is similar to that of the audio generation device 1, it is omitted.

The data conversion unit 803 performs a process of

converting the received audio data 19 into content data input by the audio generation device 1.

[0109]

For example, in a case where the audio data 19 is the audio data 19 of eight phrases with one beat of three sounds including "C (Do)", "DE (Re)", "FGA (Fa-So-La)", "B (Ti)", "C2D2 (Do2-Re2)", "E2CD (Mi2-Do-Re)", "E (Mi)", and "FG (Fa-So)" illustrated in Fig. 10, a process of discriminating the first pitch attribute codes 13 "0", "6", and "2", the second pitch attribute codes 14 "12", "78", and "34", and the third pitch attribute codes 15 "345" and "901" set in the pitch name code 16 of each sound and converting them into text data of "Thank you" associated with each pitch attribute code is performed.

[0110]

Further, for example, in a case where the audio data 19 is audio data 19a and 19b of four phrases with one beat of four sounds including "DEG# (Re-Mi-So#)", "CD (Do-Re)", "ABC2A2 (La-Ti-Do2-La2)", and "D#D2 (Re#-Re2)" illustrated in Fig. 11, the second pitch attribute code 14b "359", the second pitch attribute code 14a "13", the third pitch attribute code 15 "KMNW", and the second pitch attribute code 14a "4P" set in the pitch name code 16 of each sound are discriminated from the phrase code 21 of the sound ID 22 set in the packet data 17a and the phrase code 21

assigned to the packet data 17b, and a process of converting them into the page content of "www.XYZ.co.jp" associated with each pitch attribute code is performed.

[0111]

The converted information is displayed on the display of the reception terminal 8.

[0112]

[Processing Flow by Audio Generation System]

A processing flow by the audio generation system as an aspect of the present embodiment will be described with reference to Figs. 11 to 14. In this processing flow, as an example, a mode will be described in which the audio generation device 1, which is a tablet, is installed at a predetermined place of a convenience store, and the audio data generated by the audio generation device 1 is received and the content is displayed on a smartphone, which is the reception terminal 8 owned by a user who has visited the store. In addition, the packet data 17 will be described as a combination of the configuration examples 3 and 4 of the packet data.

[0113]

(S101)

In the audio generation device 1, the data receiving unit 102 performs a process of receiving, for example, an XYZ HP with "10% OFF DRINKS FROM 16:00!" as content, a

target product list page, and a discount page of a target product as input data transmitted from the above-described external input instrument or device.

[0114]

(S102)

The audio data generation unit 105 performs the following processes.

As illustrated in Fig. 11, the second pitch attribute code 14b "359" corresponding to three sounds is set in the first sound information storage slot 10a, the third sound information storage slot 10c, and the fourth sound information storage slot 10d of the first packet data 17a in the first layer.

The second pitch attribute code 14a "13" corresponding to two sounds is set in the first sound information storage slot 10a and the second sound information storage slot 10b of the second packet data 17a in the first layer.

A third pitch attribute code 15 "KMNW" corresponding to four sounds is set in the first sound information storage slot 10a, the second sound information storage slot 10b, the third sound information storage slot 10c, and the fourth sound information storage slot 10d of the third packet data 17a in the first layer.

Pattern codes 20 "g", "b", and "h" and phrase codes 21 "g359", "b13", and "hKMNW" illustrated in Fig. 7 are

assigned to respective pieces of packet data 17a in the first layer, and three phrase codes 21 are set as sound IDs 22.

A combination "359 13 KMNW" of the second pitch attribute codes 14a and 14b and the third pitch attribute code 15 in the first layer is associated with an address "www.XYZ.co.jp" of a website which is input data 18a.

As illustrated in Fig. 11, the second pitch attribute code 14a "4P" corresponding to two sounds is set in the first sound information storage slot 10a and the fourth sound information storage slot 10d of the packet data 17b in the second layer. Note that the sound information storage area 9b related to the packet data 17b in the second layer is set in the first sound information storage slot 10a of the first packet data 17a in the first layer.

The pattern code 20 "d" and the phrase code 21 "d4P" illustrated in Fig. 7 are assigned to the packet data 17b in the second layer, and this phrase code 21 is associated with the sound ID 22.

A portion of text data "/pro" in an address of a target product list page to be a link destination from an HP which is input data 18b is associated with the second pitch attribute code 14a "4P" in the second layer.

As illustrated in Fig. 12, a second pitch attribute code 14a "VK" corresponding to two sounds is set in the

first sound information storage slot 10a and the third sound information storage slot 10c of the packet data 17c in the third layer. Note that the sound information storage area 9c related to the packet data 17c in the third layer is set in the first sound information storage slot 10a of the packet data 17b in the second layer.

The pattern code 20 "c" and the phrase code 21 "cVK" illustrated in Fig. 7 are assigned to the packet data 17c in the third layer, and this phrase code 21 is associated with the sound ID 22.

A portion of text data "/a-discount" in an address of a discount page of a target product to be a link destination from the target product list page which is input data 18c is associated with the second pitch attribute code 14a "VK" in the third layer.

[0115]

(S103)

The audio data generation unit 105 further performs the following processes.

Audio data 19a of three phrases is generated with one beat of four sounds including "DEG# (Re-Mi-So#)" corresponding to the second pitch attribute code 14b "359" in the first layer, "CD (Do-Re)" corresponding to the second pitch attribute code 14a "13", and a pitch name code 16 representing "ABC2A2 (La-Ti-Do2-La2)" corresponding to

the third pitch attribute code 15 "KMNW".

Audio data 19b of one phrase is generated with one beat of four sounds including a pitch name code 16 representing "D#D2 (Re#-Re2)" corresponding to the second pitch attribute code 14a "4P" in the second layer.

Audio data 19c of one phrase is generated with one beat of four sounds including a pitch name code 16 representing "G#2A (So#2-La)" corresponding to the second pitch attribute code 14a "VK" in the third layer.

[0116]

(S104)

The audio data output unit 106 performs a process of outputting the audio data 19a, 19b, and 19c generated by the audio data generation unit 105 for a predetermined period at a predetermined timing. For example, the audio data 19 is output at 1 minute intervals from 16:00 to 17:00.

[0117]

(S105)

When a user who has visited the convenience store operates the reception terminal 8 to execute the application software, the data receiving unit 801 receives the audio data 19a, 19b, and 19c.

[0118]

(S106)

The data conversion unit 803 performs the following processes.

A process of discriminating the second pitch attribute code 14b "359", the second pitch attribute code 14a "13", and the third pitch attribute code 15 "KMNW" set in the pitch name code 16 of each sound from the phrase code 21 of the sound ID 22 set in the packet data 17a, and converting them into the page content of "www.XYZ.co.jp" associated with each pitch attribute code is performed.

A process of discriminating the second pitch attribute code 14a "4P" set in the pitch name code 16 of each sound from the phrase code 21 assigned to the packet data 17b and converting the second pitch attribute code 14a "4P" into the page content of "www.XYZ.co.jp/pro/list" associated with the second pitch attribute code 14a "4P" is performed.

A process of discriminating the second pitch attribute code 14a "VK" set in the pitch name code 16 of each sound from the phrase code 21 assigned to the packet data 17c and converting the second pitch attribute code 14a "VK" into the page content of "www.XYZ.co.jp/pro/list/a-discount" associated with the second pitch attribute code 14a "VK" is performed.

[0119]

(S107)

The converted website, target product list page, and

discount page of the target product are displayed on the display screen, and a user can browse and use these contents.

[0120]

As described above, in the present embodiment, since the sound information storage area is constituted by the sound information storage slot having a uniform time axis including the pitch attribute code, it is possible to make the information into melody and to make the melody into information, and it is possible to encode and decode these pieces of information.

[0121]

In particular, since the packet data is hierarchized (layered) at the time of encoding and decoding, it is possible to tree and index information by a melody, and it is possible to access an extremely large number of pieces of information.

[0122]

Then, since content data including at least one of text data, symbol data, image data, video data, or a combination thereof is turned into a melody, when this melody is received by the reception terminal, it is possible to instantly access specific information associated with the melody.

Industrial Applicability

[0123]

The audio generation device, the audio generation system, and the computer program according to the present embodiment contribute to industrial applicability by the following utilization examples.

- Utilizing to provide music language system
- Utilizing to provide various kinds of information by melodies
- Utilizing to provide access information linked with the Internet melodies
- Utilizing to provide sound information storage slot to service provider
- Utilizing as an audio advertisement medium in radio, TV, public transportation, and the like
- Utilizing for licensing melodies
- Utilizing to archive information
- Utilizing for audio encryption dedicated to service providers

[0124]

For example, in the audio generation system according to the present embodiment, a plurality of pieces of packet data 17 for specifying an HP of a government, a government office, each municipality, or the like is prepared and set as the sound ID 22.

Various kinds of information are associated with the phrase code 21 associated with the sound ID 22.

The audio data 19 including the sound ID 22 and the phrase code 21 is output by a disaster prevention speaker installed in each area.

The local residents operate the smartphone as the reception terminal 8 to receive the audio data 19.

The emergency information (such as disaster information) converted from the audio data 19 is displayed on the reception terminal 8.

[0125]

By such a utilization example, the following effects are exerted as an example in an emergency situation such as a disaster.

- Information that cannot be conveyed by words such as individual district information around a site such as a disaster can be instantaneously provided and used using audio data.

- It is also possible to provide and use information in a foreign language.

- Information can be acquired even under power failure.

Reference Signs List

[0126]

9 sound information storage area

10a-10d sound information storage slot

11 n-sound matrix

11a one-sound matrix

11b two-sound matrix

11c three-sound matrix

11d four-sound matrix

12 conversion code

13 first pitch attribute code

14 second pitch attribute code

15 third pitch attribute code

16 pitch name code

17 packet data

18 input data

19 audio data

20 pattern code

21 phrase code

22 sound ID

CLAIMS

[Claim 1]

An audio generation device that generates corresponding audio data when content data is input,

the audio generation device comprising the following configurations:

(1) packet data constructed with the following configuration is stored in a storage means;

(a) a sound information storage area including (n+2) ($n \geq 1$) sound information storage slots with one beat of (n+2) sounds as one unit;

(b) a first pitch attribute code corresponding to a pitch name code constituting one sound is set in a first sound information storage slot;

(c) a second pitch attribute code corresponding to a pitch name code constituting less than (n+2) multiple sounds is set in the sound information storage slot under the following conditions;

(c1) set in the first sound information storage slot;

(c2) set in a second or third sound information storage slot in a case where $n=1$;

(c3) set in one sound information storage slot selected from among even-numbered, odd-numbered, and (n+2)-th sound information storage slots in a case where $n \geq 2$;

(c4) further set in a combination of a plurality of the sound information storage slots selected from among even-numbered, odd-numbered, and (n+2)-th sound information storage slots in a case where $n \geq 2$; and

(d) a third pitch attribute code corresponding to a pitch name code constituting (n+2) sounds is set in all the sound information storage slots, and

(2) a sound generation means that generates audio data having (n+2) sound and one beat corresponding to the input content data as one unit according to the following procedure;

(a) performing a process of generating the packet data by associating the input content data with at least one of the first pitch attribute code, the second pitch attribute code, and the third pitch attribute code; and

(b) performing a process of generating the audio data composed of the pitch name code corresponding to the packet data.

[Claim 2]

The audio generation device according to claim 1, further comprising the following configurations:

(1) (e) a pattern code representing a setting pattern of the first pitch attribute code, the second pitch attribute code, and the third pitch attribute code in the sound information storage slot is assigned to the packet

data; and

(f) a combination of the pattern code, the first pitch attribute code, the second pitch attribute code, or the third pitch attribute code is set as a phrase code, and a plurality of the phrase codes is set as sound IDs.

[Claim 3]

The audio generation device according to claim 1, further comprising the following configurations:

(1) (e) a plurality of pieces of the packet data is hierarchized, and the sound information storage area related to another piece of the packet data is set in the sound information storage area related to one piece of the packet data; and

(2) (c) a process of associating the input content data with at least one of the first pitch attribute code, the second pitch attribute code, and the third pitch attribute code set in the packet data of any hierarchy is performed.

[Claim 4]

The audio generation device according to any one of claims 1 to 3, further comprising the following configuration:

(3) an audio data output means that outputs the generated audio data.

[Claim 5]

An audio generation system comprising: an audio

generation device that generates corresponding audio data when content data is input; and a reception terminal that receives the audio data from the audio generation device,

the audio generation system having the following configurations:

(1) the audio generation device includes a storage means that stores packet data constructed with the following configuration;

(a) a sound information storage area including $(n+2)$ ($n \geq 1$) sound information storage slots with one beat of $(n+2)$ sounds as one unit;

(b) a first pitch attribute code corresponding to a pitch name code constituting one sound is set in a first sound information storage slot;

(c) a second pitch attribute code corresponding to a pitch name code constituting less than $(n+2)$ multiple sounds is set in the sound information storage slot under the following conditions;

(c1) set in the first sound information storage slot;

(c2) set in a second or third sound information storage slot in a case where $n=1$;

(c3) set in one sound information storage slot selected from among even-numbered, odd-numbered, and $(n+2)$ -th sound information storage slots in a case where $n \geq 2$;

(c4) further set in a combination of a plurality of the sound information storage slots selected from among even-numbered, odd-numbered, and (n+2)-th sound information storage slots in a case where $n \geq 2$; and

(d) a third pitch attribute code corresponding to a pitch name code constituting (n+2) sounds is set in all the sound information storage slots,

(2) the audio generation device includes a sound generation means configured to generate audio data having (n+2) sound and one beat corresponding to the input content data as one unit according to the following procedure;

(a) performing a process of generating the packet data by associating the input content data with at least one of the first pitch attribute code, the second pitch attribute code, and the third pitch attribute code; and

(b) performing a process of generating the audio data composed of the pitch name code corresponding to the packet data,

(3) the audio generation device includes an audio data output means that outputs the generated audio data, and

(4) the reception terminal includes a data conversion means that converts the generated audio data into the content data.

[Claim 6]

A computer program causing a computer to function as

the audio generation system according to claim 5.