



amendment dated January 8, 2020 to Claims 1 to 23 of the scope of claims amended by the Amendment. The Amendment includes a matter to amend Claim 18 before the amendment to Claim 18 after the amendment (The underlines indicate amended portions).

(Claim 18 before the amendment)

[Claim 18]

A data structure comprising:

setting information in which an arrangement order of pixel values in a captured image, and a first arrangement order including a reading order of pixels in the captured image are defined; and

a data structured body formed in the first arrangement order, wherein

an object data generator arranges unit data including pairs each having the pixel value in the captured image and a distance from a point on an object corresponding to the pixel value to a predetermined viewpoint in the first arrangement order, using the captured image obtained by imaging the object from the predetermined viewpoint and results of measuring the distance from the predetermined viewpoint to the point on the object, to generate object data,

a point cloud data generator reads the object data based on the setting information to calculate positional information on points on the object, and arranges point data including the positional information in the first arrangement order to generate point cloud data.

(Claim 18 after the amendment)

[Claim 18]

A data structure of a captured image captured by an imager and to be used in an imaging device including the imager and an image processor, comprising:

setting information in which an arrangement order of pixel values in the captured image, and a first arrangement order including a reading order of pixels in the captured image are defined; and

a data structured body formed by arranging the pixel values in the first arrangement order, wherein

the data structured body is generated, by the image processor, by arranging unit data including pairs each having the pixel value in the captured image and a distance from a point on an object corresponding to the pixel value to a predetermined viewpoint in the first arrangement order, using the captured image obtained by imaging the object

from the predetermined viewpoint and results of measuring the distance from the predetermined viewpoint to the point on the object,

the setting information is used by the image processor when the data structured body is read, positional information on points on the object is calculated, and point data including the positional information are arranged in the first arrangement order to generate point cloud data.

## 2 Conformance of amendment

### (1) Regarding the purpose of the amendment

The amendment according to Claim 18 is as follows:

(i) To clarify the data structure after the amendment as "a data structure of a captured image captured by an imager and to be used in an imaging device including the imager and an image processor", by specifying the matter "a data structure of a captured image captured by an imager and to be used in an imaging device including the imager and an image processor".

(ii) To clarify the "data structured body formed in the first arrangement order" before the amendment as a data structured body formed by arranging "the pixel value in the captured image", by specifying, regarding the "pixel value in the captured image", the data structure after the amendment as "a data structured body formed by arranging the pixel values in the first arrangement order".

(iii) To clarify the contents of processing to generate a data structured body and an entity which performs the processing, by defining not the "object data" before the amendment but the "data structured body" after the amendment as the data to be generated by "arranging" "unit data" "in the first arrangement order" and by defining not the "object data generator" but the "image processor" as the entity that generates the "data structured body".

(iv) To clarify, regarding the processing to "generate point cloud data", data and the contents to be used in processing to generate point cloud data and an entity which performs the processing, by defining not the "point cloud data generator" but the "image processor" as the entity that "reads the object data based on the setting information to calculate positional information on points on the object, and arranges point data including the positional information in the first arrangement order", and by modifying the data to be read from the "object data" before the amendment to the "data structured body" in conformity to (iii).

(v) In light of the above descriptions in (i) to (iv), the amendment is intended to resolve the reasons for refusal by clarifying an ambiguous description regarding the matters for

which absence of applicability has been judged due to existence of the ambiguous description on the data structure or the entity of the processing in Claim 18. The amendment falls under the provisions of Article 17-2(5)(iv).

(2) Regarding the scope of the amendment and unity

The specification, the scope of claims, and drawings originally attached in the application (hereinafter referred to as the Specification, etc.) includes the following descriptions. (The underlines were added by the body for emphasis.)

"[0016]

FIG. 1B is a block diagram illustrating an example of the configuration of the imaging device 1. For example, the imaging device 1 includes a detector 2, an image processor 3 (image processing device), an information calculator 4, a memory 5, a communicator 6 (transmitter), a controller 7, and a main body 8. ...

[0017]

FIG. 2 is a diagram illustrating an example of the detector 2. ... The detector 2 includes an imager 11 and a distance measurer 12. ...

[0018]

The imager 11 includes an image forming optical system 13 and an imaging element (detection element, light receiving element) 14. ...

[0019]

For example, the imaging element 14 is a CMOS image sensor or a CCD image sensor in which a plurality of pixels are two-dimensionally arranged. For example, the imaging element 14 is housed in the main body 8. The imaging element 14 takes an image formed by the image forming optical system 13. For example, imaging results (detection results) of the imaging element 14 include information (for example, RGB data) on pixel value (for example, gray-scale values) of each color at each pixel. For example, the imaging element 14 outputs the imaging results in a data format of a full-color image.

...

[0023]

As illustrated in FIG. 3B, the image data Da includes setting information Da1 and a pixel data structured body Da2. ...

[0024]

The pixel data structured body Da2 stores therein pixel values of each color of a plurality of pixels. For example, the pixel data structured body Da2 has a structure in

which pixel values of B, G, and R are successively arranged in a predetermined order in pixel data for each pixel and pieces of pixel data are repeatedly arranged in the arrangement order of the pixels."

"[0034]

Referring back to FIG. 1, the image processor 3 (image processing device) includes an object data generator 21 and a point cloud data generator 22. The object data generator 21 generates object data Dc (described later with reference to FIG. 5A) by using captured images taken by the imager 11 and measurement results of the distance measurer 12. The point cloud data generator 22 calculates positional information (for example, coordinates) of a point on the object OB based on the object data Dc. The point cloud data generator 22 arranges point data F including at least positional information on points on the object OB to generate point cloud data De (described later with reference to FIG. 5(B) and FIG. 5(C))."

...

"[0036]

FIG. 5(A) is a conceptual diagram illustrating an example of the object data Dc according to the embodiment. For example, the object data Dc is image data on an RGB-D image. The object data Dc includes setting information Dc1 and a unit data structured body Dc2."

According to the above descriptions in the Specification, etc., the amended matters according to Claim 18 are based on the underlined descriptions in the Specification, etc., especially. Thus the amendment according to Claim 18 is made within the scope of matters described in the Specification, etc. at the time of filing of the application. The amendment falls under the provisions of Article 17-2(3) of the Patent Act.

The amendment according Claim 18 is, as described above, intended to clarify an ambiguous description. Thus, it can be said that the invention recited in Claim 18 before the amendment and the invention recited in Claim 18 after the amendment satisfy the requirements of unity of invention. The amendment according to Claim 18 falls under the provisions of Article 17-2(4) of the Patent Act.

No. 3 Reasons in the examiner's decision

The outline of the reasons in the examiner's decision dated February 18, 2020 is as follows.

(Applicability to an invention) The matters recited in Claim 18 of this application do not satisfy the requirements stipulated in the main paragraph of Article 29(1) of the Patent Act. Thus, the Appellant should not be granted a patent for the invention.

#### Note

The invention according to Claim 18 after the amendment of the present application only defines "data" including "setting information" and "data structured body", which is an artificial agreement. Thus, the invention is not a creation of technical ideas utilizing a law of nature, and is not regarded as an invention.

Thus, the data structure according to Claim 18 after the amendment is not a creation of technical ideas utilizing a law of nature, and not regarded an "invention". The Appellant should not be granted a patent for the invention since the data structure does not satisfy the requirements stipulated in the main paragraph of Article 29(1) of the Patent Act.

#### No. 4 The Invention

The invention according to Claim 18 of the present application (hereinafter referred to as "the Invention"), which is an invention specified by the matters recited in Claim 18 of the scope of claims amended by the written amendment submitted on April 20, 2020, is as follows.

The symbols (A) to (B2) of the constituent components were added by the body for explanation. The constituent components are hereinafter referred to as Component A to Component B2. The portions amended by the written amendment submitted on April 20, 2020 are underlined.

(The Invention)

[Claim 18]

A A data structure of a captured image captured by an imager and to be used in an imaging device including the imager and an image processor, comprising:

A1 setting information in which an arrangement order of pixel values in the captured image, and a first arrangement order including a reading order of pixels in the captured image are defined; and

A2 a data structured body formed by arranging the pixel values in the first arrangement order, wherein

B1 the data structured body is generated, by the image processor, by arranging unit

data including pairs each having the pixel value in the captured image and a distance from a point on an object corresponding to the pixel value to a predetermined viewpoint in the first arrangement order, using the captured image obtained by imaging the object from the predetermined viewpoint and results of measuring the distance from the predetermined viewpoint to the point on the object,

B2 the setting information is used by the image processor when the data structured body is read, positional information on points on the object is calculated, and point data including the positional information is arranged in the first arrangement order to generate point cloud data.

#### No. 5 Judgment

1. Regarding the matters specifying the invention of the "data structure" in the Invention

(1) Configuration of the "data structure of a captured image"

The "data structure of a captured image" in the Invention is a "data structure of a captured image" which is "captured by an imager and used in an imaging device including the imager and an image processor" (Component A).

The "data structure" includes "setting information in which a first arrangement order is defined which includes an arrangement order of pixel values in the captured image and a reading order of pixels in a captured image" (Component A1) and "a data structured body formed by arranging the pixel values in the first arrangement order" (Component A2).

The Component A2 "data structured body" in the Invention is, according to Component B, is formed by "arranging" "unit data" "including pairs each having "the pixel value" "in the captured image obtained by imaging the object from the predetermined viewpoint" "and a distance from a point on the object corresponding to the pixel value to the predetermined viewpoint"" "in the first arrangement order".

(2) Information processing relating to the "data structure of a captured image"

Meanwhile, the "data structured body" in the invention is "generated" "by the image processor", and " generated by arranging, in the first arrangement order", "unit data including pairs each having the pixel value in the captured image and a distance from a point on an object corresponding to the pixel value to a predetermined viewpoint", "using the captured image obtained by imaging the object from the predetermined viewpoint and results of measuring the distance from the predetermined viewpoint to the point on the object" (Component B1).

Accordingly, in the "data structured body" in the Invention, information

processing relating to the Component B1 is to "generate" a "data structured body" by "arranging, in the first arrangement order," "unit data" "including pairs each having "the pixel value in the captured image" and "a distance from a point on the object corresponding to the pixel value to a predetermined viewpoint".

The "setting information" in the Invention is "used" "by the image processor", and "used when "the data structured body is read", "positional information on points on the object is calculated", and point data including the positional information is arranged in the first arrangement order to generate point cloud data" (Component B2).

Accordingly, in the "setting information" in the Invention, information processing relating to the Component B2 is to "generate" "point cloud data" by "reading" a "data structured body" and "arranging", "in the first arrangement order", "point data including positional information" regarding the "calculated" "positional information on points on the object".

## 2. Judgment on Applicability to an invention

### (1) Regarding the "data structure of a captured image"

A. The "data structure of a captured image" in the Component A is examined.

The Component A is considered to specify that the "data structure of a captured image" is "captured by an imager and to be used in an imaging device including the imager and an image processor".

The "data structure of a captured image" is considered to include "setting information" and "data structured body".

B. The "setting information" in the Component A1 and the "data structured body" in the Component A2 are examined.

The "setting information" in the Component A1 is considered to specify the information in which " an arrangement order of pixel values in the captured image, and a first arrangement order including a reading order of pixels in the captured image are defined".

The "data structured body" in the Component A2 is, in light of the Component B1, considered as information formed by "arranging", "in the first arrangement order", "unit data" including pairs each having "the pixel value" and "a distance from a point on the object corresponding to the pixel value to a predetermined viewpoint".

C. Comprehensively considering A and B, the "data structure of a captured image" in



Claim 18 includes "setting information" in which "an arrangement order of pixel values in the captured image" and "a first arrangement order including a reading order in the captured image" are defined, and "data structured body" formed by "arranging", "in the first arrangement order", "unit data" including pairs each having "a pixel value" and "a distance". Thus, it can be said that the "unit data" including pairs each having "a pixel value" and "a distance" are formed by arrangement of data arranged in an arrangement order defined in the "setting information", and that the "unit data" have a "data structure" which defines arrangement of data.

(2) Regarding "data structure equivalent to program"

(2-1) Information processing relating to the "data structure of a captured image" in the Invention is as described in 1 (2). Specifically, they are as follows.

Information processing of the Component B1 is to generate a "data structured body" by "arranging", "in the first arrangement order", "unit data" "including pairs each having "the pixel value in the captured image" and "a distance from a point on an object corresponding to the pixel value to a predetermined viewpoint".

Information processing of the Component B2 is to, by using "setting information", "generate" "point cloud data" by "reading" a "data structured body" formed by arranging "unit data" and "arranging", "in the first arrangement order", "point data including positional information" regarding the "calculated" "positional information on points on the object".

(2-2) Accordingly, in the Invention, information processing to be determined from relationship between data elements of a "data structured body" formed by arranging "unit data" of the Component A2 based on the "setting information" in the Component A1 and the Component B1 is

(i) to generate a data structured body by arranging unit data including pairs each having a pixel value and a distance in a first arrangement order, and  
(ii) to generate point cloud data by reading a data structured body formed by arranging the unit data in (i), using setting information, and arranging, in the first arrangement order, point data including calculated positional information of an object.

Therefore, information processing to be determined from relationship between data elements of a "data structure" including "setting information" and "a data structured body" formed by arranging "unit data" in the Invention is

- arranging unit data including pairs of the predetermined data elements in (i), and
- arranging point data including calculated positional information of an object in (ii) to

generate point data.

(2-3) Thus, the "data structure of a captured image" in the Invention only specifies a data group including

- a data structured body which is data obtained by arranging unit data including pairs of predetermined data elements,

and

- setting information which is data to be used when another type of data (point cloud data) is generated by arranging the above arranged data including different data.

The above data structure is not similar to a program including a set of instructions given to an electronic computer which are combined in order to produce a specific result, in other word, the data structure does not specify processing of an electronic computer at all.

Therefore, it cannot be said that the "data structure of a captured image" in the Invention is "a computer program (a set of instructions given to an electronic computer which are combined in order to produce a specific result) and any other information that is to be processed by an electronic computer equivalent to a computer program" stipulated in Article 2 (4) of the Patent Act.

(2-4) The information processing relating to the "data structure of a captured image" in the Invention is as described in 1 (2), which only specifies processing in generating a "data structured body", which is information "formed in the first arrangement order" by the "image processor", which is only information to be used by the "image processor" and to be processed when "used in generating point cloud data", and which only describes a usage that "positional information on a point on an object is calculated" and "point data including the positional information" "are arranged in the first arrangement order to generate point cloud data".

(2-5) In light of the above, the Invention, on the whole, does not concretely specify information processing based on "data structure", and it is only a description of "artificial agreement". The Invention is not "a creation of technical ideas utilizing a law of nature" stipulated in the main paragraph of Article 2 of the Patent Act, and is not regarded as an "invention" stipulated in the main paragraph of Article 29(1) of the Patent act.

3. Regarding the allegation in the written appeal

The Appellant alleges in the written appeal submitted on April 20, 2020 "4. Reasons why the Invention should be granted a patent", as follows:

"4. Reasons why the Invention should be granted a patent

The data structure according to Claim 18 is considered as a data structure which enables a computer to perform information processing where "the data structured body is generated, by the image processor, by arranging unit data including pairs each having the pixel value in the captured image and a distance from a point on an object corresponding to the pixel value to a predetermined viewpoint in a first arrangement order, using the captured image obtained by imaging the object from the predetermined viewpoint and results of measuring the distance from the predetermined viewpoint to the point on the object", and "the setting information is used by the image processor when the data structured body is read, positional information on points on the object is calculated, and point data including the positional information are arranged in the first arrangement order to generate point cloud data", which is determined from relationship between data elements of the data structure comprising setting information in which an arrangement order of pixel values in the captured image ,and a first arrangement order including a reading order of pixels in a captured image are defined and a data structured body formed by arranging the pixel values in the first arrangement order, which is recited in the claim.

Thus, the data structure is a data structure equivalent to a computer program.

According to the recitation of Claim 18, it is considered that specific arithmetic operation or processing of information in accordance with the purpose of use, such as generation of a data structured body and generation of point cloud data, is implemented by concrete means or concrete procedures of software and hardware resources in cooperation with each other.

Accordingly, the data structure is to construct a computer operation method in accordance with the purpose of use by cooperation of software and hardware resources.

Therefore, since information processing specified by the data structure equivalent to a computer program is implemented concretely by using hardware resources, the data structure according to Claim 18 is a creation of technical ideas utilizing a law of nature, and regarded as an 'invention'".

However, as judged in 2. (2) (2-3), in Claim 18 of the present application, The "data structure" in the Invention only specifies a data group including a "data structured body" which is data obtained by arranging unit data including pairs of predetermined data elements,

and "setting information" which is data to be used when another data is generated by arranging the above arranged data including different data.

The above data structure is not similar to a program including a set of instructions given to an electronic computer which are combined in order to produce a specific result; in other words, the data structure does not specify processing of an electronic computer at all. Thus, the data structure is not a "computer program" or is not "equivalent to a computer program" stipulated in Article 2(4) of the Patent Act.

The information processing relating to the "data structure" of the Invention, as indicated in 2. (2) (2-4), only specifies processing in generating a "data structured body", which is only information to be processed when "used in generating point cloud data", and which only describes a usage that "positional information on a point on an object is calculated" and "point data including the positional information" "are arranged in the first arrangement order to generate point cloud data".

In light of the above, the Invention, on the whole, does not concretely specify information processing based on "data structure", and it is only a description of "artificial agreement" as described in 2. (2-5). The Invention is not "a creation of technical ideas utilizing a law of nature" stipulated in the main paragraph of Article 2 of the Patent Act, and not regarded as an "invention" stipulated in the main paragraph of Article 29(1) of the Patent Act.

Therefore, the above Appellant's allegation in the written appeal cannot be accepted.

#### 4. Summary

As above, since the "data structure of a captured image" in the Invention just indicates "presentation of information", it is not "a creation of technical ideas utilizing a law of nature" in Article 2 of the Patent Act, and not regarded as an "invention" stipulated in the main paragraph of Article 29(1) of the Patent Act.

#### No. 5 Closing

The Invention does not satisfy the requirements stipulated in the main paragraph of Article 29(1) of the Patent Act. The Appellant should not be granted a patent for the invention.

The present application should be rejected without examining other claims.

Therefore, the appeal decision shall be made as described in the conclusion.

March 19, 2021

Chief administrative judge: SHIMIZU, Masakazu  
Administrative judge: KAWASAKI, Hiroshi  
Administrative judge: CHIBA, Teruhisa