Appeal decision

Appeal No. 2018-8959

Kyoto, Japan
Appellant KYOCERA Corporation

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2016-207861, entitled "MUSCLE AREA ESTIMATION SYSTEM, DEVICE, AND MUSCLE AREA ESTIMATION METHOD" (the application published on January 19, 2017, Japanese Unexamined Patent Application Publication No. 2017-12875) has resulted in the following appeal decision.

Conclusion

The appeal of the case was groundless.

Reason

No. 1 History of the procedures

The present application is a divisional application filed on October 24, 2016 from Japanese Patent Application No. 2014-258585 filed on December 22, 2014. Reasons for refusal were notified as of August 25, 2017. A written opinion and a written amendment were submitted on October 31, 2017. An examiner's decision of refusal (hereinafter referred to as "the Examiner's decision") was issued as of March 29, 2018. In response, an appeal against the examiner's decision of refusal was made and a written amendment (hereinafter referred to as "the Amendment") was submitted on June 29, 2018.

No. 2 Decision to dismiss amendment on the Amendment

[Conclusion of Decision to Dismiss Amendment]

The Amendment shall be dismissed.

[Reason]

1 Regarding the Amendment

(1) Claims before the Amendment

The descriptions of the scope of claims before the Amendment, which were amended by the written amendment submitted on October 31, 2017, are as follows.

"[Claim 1]

A muscle area estimation system comprising

a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least partial contour of the human body.

[Claim 2]

The muscle area estimation system described in Claim 1, wherein

the control unit displays an image corresponding to the estimated muscle area on a display unit.

[Claim 3]

The muscle area estimation system described in Claim 2,

comprising a storage unit for storing a plurality of CT sample images, wherein

the control unit displays, on the display unit, one CT sample image corresponding to at least the estimated muscle area, from the plurality of CT sample images.

[Claim 4]

A device comprising

a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least partial contour of the human body.

[Claim 5]

The device described in Claim 4, comprising a display unit on which an image corresponding to the estimated muscle area is displayed.

[Claim 6]

The device described in Claim 5,

comprising a storage unit for storing a plurality of CT sample images, wherein

the control unit displays, on the display unit, one CT sample image corresponding to at least the estimated muscle area, from the plurality of CT sample images.

[Claim 7]

A muscle area estimation method including:

a step of computing at least partial contour of a human body by means of a control unit;

a step of calculating shape characteristics from the computed partial the contour of the human body; and

a step of estimating a muscle area in a cross section of the human body on the basis of the shape characteristics.

[Claim 8]

A muscle area estimation system comprising

a control unit that estimates a muscle area, and

a storage unit for storing a plurality of CT sample images, wherein

the control unit displays, on the display unit, one CT sample image corresponding to at least the estimated muscle area, from the plurality of CT sample images.

[Claim 9]

A muscle area estimation device comprising

a control unit that estimates a muscle area, and

a storage unit for storing a plurality of CT sample images, wherein

the control unit displays, on the display unit, one CT sample image corresponding to at least the estimated muscle area, from the plurality of CT sample images.

[Claim 10]

A muscle area estimation method including:

a step of estimating a muscle area, and

a step of displaying, on the display unit, one CT sample image corresponding to at least the estimated muscle area, from the plurality of CT sample images."

(2) Claims of the Amendment

The descriptions of the scope of claims amended by the Amendment are as follows.

"[Claim 1]

A muscle area estimation system comprising:

a measuring instrument to be moved along a human body and comprising at least a sensor unit; and

a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least a part of contours of the human body which is computed based on information from the sensor unit.

[Claim 2]

The muscle area estimation system described in Claim 1, wherein

the control unit displays an image corresponding to the estimated muscle area on a display unit.

[Claim 3]

The muscle area estimation system described in Claim 2,

comprising a storage unit for storing a plurality of CT sample images, wherein

the control unit displays, on the display unit, one CT sample image corresponding to at least the estimated muscle area, from the plurality of CT sample images.

[Claim 4]

A device comprising:

a measuring instrument to be moved along a human body and comprising at least a sensor unit; and

a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least a part of contours of the human body which is computed based on information from the sensor unit.

[Claim 5]

The device described in Claim 4, comprising a display unit on which an image corresponding to the estimated muscle area is displayed.

[Claim 6]

The device described in Claim 5,

comprising a storage unit for storing a plurality of CT sample images, wherein

the control unit displays, on the display unit, one CT sample image corresponding to at least the estimated muscle area, from the plurality of CT sample images.

[Claim 7]

A muscle area estimation method including:

a step of moving a measuring instrument comprising at least a sensor unit along a human body;

a step of computing at least a part of contours of a human body, by means of a control unit, on the basis of information from the sensor unit;

a step of calculating shape characteristics from the computed part of the contours of the human body; and

a step of estimating a muscle area in a cross section of the human body on the basis of the shape characteristics." (Amended portions are underlined.)

2 Propriety of amendment

(1) Regarding the object of the amendment

A Regarding Claim 1

(A) As described in the above 1, the Amendment on Claim 1 includes an addition of a specifying matter, "a measuring instrument to be moved along a human body and comprising at least a sensor unit", to the statement before the Amendment, "A muscle area estimation system comprising a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least a part of contours of the human body".

(B) Judgment

a Regarding restriction by limitation

The invention according to Claim 1 before the Amendment includes the matter specifying the invention regarding "control unit" in the recitation "a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least partial contour of the human body". However, the invention does not include a matter regarding the "measuring instrument" as a matter required for specifying the invention described in the claims under the provisions of Article 36(5) of the Patent Act.

The "control unit" and the "gauge" differ in function and effect to be worked, and they have different concepts as matters specifying the invention.

Accordingly, the addition of the matters specifying the invention, "a measuring instrument to be moved along a human body and comprising at least a sensor unit", to the invention according to Claim 1 before the Amendment is an addition of a matter specifying the invention, "measuring instrument", which is different in concept from the "control unit", to the "system". It does not make the matters specifying the invention in the claims before the Amendment more specific conceptually.

The addition of the matters specifying the invention, "a measuring instrument to be moved along a human body and comprising at least a sensor unit", to the invention according to Claim 1 before the Amendment does not fall under restriction of matters required to identify the invention stated in a claim or claims under Article 36(5) of the Patent Act stipulated in Article 17-2(5)(ii) of the Patent Act with brackets. Therefore, the addition is not aimed at matters stipulated in Article 17-2(5)(ii) of the Patent Act.

b Regarding other objects

The addition of the matters specifying the invention, "a measuring instrument to be moved along a human body and comprising at least a sensor unit", to the invention according to Claim 1 before the Amendment does obviously not fall under deletion of a claim or claims stipulated in Article 17-2(5)(i) of the Patent Act, correction of errors stipulated in Article 17-2(5)(iii) of the Patent Act, or clarification of an ambiguous statement stipulated in Article 17-2(5)(iv) of the Patent Act.

(C) Summary

The Amendment on Claim 1 is not aimed at matters stipulated in any of Articles 17-2(5)(i) to (iv) of the Patent Act.

B Regarding Claims 4 and 7

Regarding the Amendment on Claims 4 and 7, as described in 1, Claim 4 includes an addition of matters specifying the invention, "a measuring instrument to be moved along a human body and comprising at least a sensor unit", and Claim 7 includes an addition of matters specifying the invention, "a step of moving a measuring instrument comprising at least a sensor unit along a human body". As described in A (B) a, the former is to add a matter specifying the invention, "a measuring instrument to be moved along a human body and comprising at least a sensor unit", which is different in concept from the "control unit", and the latter is to add a matter specifying the invention, "a step of moving a measuring instrument comprising at least a sensor unit along a human body", which is different in concept from the "step of computing", "step of calculating", and "step of estimating". Thus, it does not make the matters specifying the invention in the claims before the Amendment more specific conceptually.

The above addition does not fall under restriction of matters required to identify the invention stated in a claim or claims under Article 36(5) of the Patent Act stipulated in Article 17-2(5)(ii) of the Patent Act with brackets. Therefore, the addition is not aimed at matters stipulated in Article 17-2(5)(ii) of the Patent Act. Furthermore, the addition does obviously not fall under deletion of a claim or claims stipulated in Article 17-2(5)(i) of the Patent Act, correction of errors stipulated in Article 17-2(5)(iii) of the Patent Act, or clarification of an ambiguous statement stipulated in Article 17-2(5)(iv) of the Patent Act.

The Amendment on Claims 4 to 7 is also not aimed at matters stipulated in any of Articles 17-2(5)(i) to (iv) of the Patent Act.

C Summary of the object of the amendment

In light of the above, the Amendment is not aimed at matters stipulated in any of Articles 17-2(5)(i) to (iv) of the Patent Act.

(2) Judgment on independent requirements for patentability

Although it was judged, as described in (1), that the Amendment is not aimed at the matters stipulated in any of Articles 17-2(5)(i) to (iv) of the Patent Act, just to be sure, we will examine whether the invention after the Amendment described in Claim 1 summarized in 1 (2) (hereinafter referred to as "Amended Invention") falls under the provisions of Article 126(7) of the Patent Act which is applied mutatis mutandis in the provisions of Article 17-2(6) of the Patent Act (whether the invention could have been patented independently at the time of filing of the patent application), especially whether the invention satisfies the requirements stipulated in Article 36(6)(i) of the Patent Act (i.e.,

support requirements), which is the reasons for refusal stated in the examiner's decision, assuming that the addition of the matters specifying the invention regarding Claims 1 and 4, "a measuring instrument to be moved along a human body and comprising at least a sensor unit", and the addition of the matters specifying the invention regarding Claim 7, "a step of moving a measuring instrument comprising at least a sensor unit along a human body", are aimed at restriction in a limited way, or the matters described in Article 17-2(5)(ii) of the Patent Act.

A Description of the detailed description of the invention

(A) In the detailed description of the invention, the following matters are described as problems to be solved by the Amended Invention and means for solving the problems.

"[Problem to be solved by the invention]

[0004]

However, measurement using CT and biometric impedance can be conducted in only limited facilities.

[0005]

The object of the Invention for the above problem is to provide a muscle area estimation system for estimating a muscle area through a simple method, a device, and a muscle area estimation method.

[Means for solving the problem]

[0006]

In order to solve the problems described above, the muscle area estimation system according to the Invention comprises a gauge including a first sensor unit to acquire orientation information of the system and a device unit to acquire movement information of the system, and a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least a part of contours of the human body which is computed based on the orientation information and movement information."

The following matters are described as the embodiment of measuring a contour of a human body.

"[0065]

FIG. 5 and FIG. 6 illustrate measurement of the contour of an abdominal cross section using a smartphone 1 according to the embodiment.

[0066]

FIG. 5 is a schematic diagram which shows measurement of the contour of an abdominal cross section according to the embodiment.

[0067]

FIG. 6 is a flow diagram of measuring an abdominal cross section according to the embodiment.

[0068]

A user starts a measurement application 9Z for measuring an abdominal cross section in step S101. The measurement is started in step S102. At the start of the measurement, the smartphone 1 is put in one of positions on the surface of the abdomen 60 where cross-sectional contour is to be measured. This embodiment shows measurement of cross-sectional contour at a height of the umbilicus of the user (position indicated by A-A in FIG. 5). The smartphone 1 can be brought into contact with the surface of the abdomen 60 or put on the surface of the abdomen 60 through clothes as long as measurement of the cross-section contour is not impeded. The measurement can be started anywhere in the position A-A on the abdomen. A preset start action is executed on the smartphone 1 to start measurement. The preset start action may be pressing one button 3 of the smartphone 1 or tapping a predetermined position on a touch screen 2B. A surface of the smartphone 1 facing the surface of the abdomen may be a front face 1A, a back face 1B, or any of side faces 1C1-1C4. For better operability, the back face 1B is the opposing face in this embodiment.

[0069]

In step S103, the user moves the smartphone 1 around the abdomen 60 along the surface of the abdomen 60 in the position A-A. When the smartphone 1 put on the surface of the abdomen 60 is moved at a constant speed, information can be acquired at equal intervals, thereby improving accuracy of contour measurement.

[0070]

In step S103, under programmed conditions, orientation information is acquired by a direction sensor 17 and movement information is acquired by an acceleration sensor 16. The orientation information and the movement information are acquired several times. The orientation information and the movement information are acquired in accordance with clock signals output from a timer 11. Acquisition cycle for the information is selected appropriately in accordance with the size or complexity of a cross section of a part to be measured. The information acquisition cycle is selected, for example, from sampling frequencies 5-60 Hz, appropriately. The acquired orientation information and movement information are temporarily stored in the smartphone 1. This measurement is successively executed from the start in step S102 to the end in step S104.

[0071]

When the smartphone 1 put on the surface of the abdomen 60 is moved all the way around the abdomen, the user executes a preset end action on the smartphone 1 to terminate the measurement (step S104). The preset end action may be pressing one button 3 of the smartphone 1 or tapping a predetermined position on the touch screen 2. Alternatively, when the orientation information acquired by the direction sensor 17 of the smartphone 1 is coincident with the orientation information at the start of measurement or is changed at 360 degrees from the orientation information at the start of measurement, completion of an entire route is automatically recognized and the smartphone 1 may terminate the measurement. The automatic recognition eliminates the end action of the user, thereby further simplifying the measurement.

[0072]

The smartphone 1 computes, in step S105, the orientation information and the movement information acquired in step S103. The computation is executed by a controller 10. The controller 10 computes cross-sectional contour of the abdomen and abdominal circumference of the user. The computation in S105 is described later.

[0073]

The smartphone 1 outputs a result computed in step S105, in step S106. The result of computation is output by various ways, such as displaying on a display 2b or transmission to a server. When output of the computational result of the cross-sectional contour of the abdomen and the abdominal circumference is completed, the flow ends.

[0074]

In this embodiment, the smartphone 1 is moved with a back face 1B put on the abdomen, in the y-axis direction. In this case, the direction sensor 17 may be a uniaxial sensor which can measure a direction of a smartphone in the y-axis direction. The acceleration sensor 16 may be a uniaxial sensor which can measure the amount of movement in the y-axis direction.

[0075]

FIG. 7 to FIG. 9 illustrate a method of computing the cross-sectional contour in the smartphone 1.

[0076]

FIG. 7 shows one example of orientation and moving amount according to the embodiment.

[0077]

In FIG. 7 (a) and (b), the x-axis represents time from the start to the end of the measurement. The time is counted by clock signals output by the timer 11. In measuring the circumference of abdomen in Tn seconds, the start of measurement is 0

second, and the end of measurement is Tn seconds. The smartphone 1 acquires orientation information and movement information at predetermined acquisition cycles in 0 to Tn seconds. The letter n is an integer representing record number.

[0078]

In FIG. 7 (a), the x-axis represents time and the y-axis represents direction of the smartphone 1. The direction of the smartphone 1 on the y-axis is orientation information acquired by the direction sensor 17. In this embodiment employing the direction sensor 17 as a first sensor unit, the orientation information is defined as a direction of the smartphone 1. The direction of the smartphone 1 is represented by an angle of 0 to 360 degrees. The orientation of the smartphone 1 is determined to complete a movement when an angle is changed at 360 degrees from an initial angle at the start of measurement. In this embodiment, for better understanding, the initial angle is set to 0 degree, and the direction after completing a movement is 360 degrees.

[0079]

In FIG.7 (b), the x-axis represents time and the y-axis represents moving amount of the smartphone 1. The moving amount of the smartphone 1 on the y-axis is computed based on the movement information acquired by the acceleration sensor 16. The movement information of the smartphone 1 in this embodiment is acceleration data acquired by the acceleration sensor 16. The moving amount is computed by the controller 10, by executing time integration on acceleration data twice. When the acceleration data includes large noise, digital filtering may be executed. For example, a low-pass filter or a band-pass filter can be used as a digital filter. The moving amount of the smartphone 1 after completing the measurement corresponds to a length around a part to be measured, which is abdominal circumference in this embodiment. Abdominal circumference is preferably computed in consideration of arrangement of the acceleration sensor 16 in the smartphone 1. In this embodiment, the moving amount is corrected in consideration of a distance between the acceleration sensor 16 and the back face 1B facing the surface of the abdomen 60 in advance, to calculate a correct abdominal circumference.

[0080]

In this embodiment, the direction and the moving amount are measured in the same time Tn. The direction and the moving amount may be measured at different times Ta, Tb. In this case, the y-axis in FIG. 7 (a) uses normalized time 0-1 normalized with Ta, and the y-axis in FIG. 7 (b) uses normalized time 0-1 standardized with Tb, which preferably indicate the same numerical values on the y-axis.

[0081]

FIG. 8 is an example of records including acquired information.

[0082]

A record number R0 is a start of measurement, and a record number Rn is an end of measurement. Each of the records includes orientation information and movement information corresponding to the time, in a pair. Each of the records includes a moving amount calculated based on movement information. In this embodiment using a direction sensor, orientation information is a direction in which the smartphone 1 faces. An orientation and a moving amount calculated based on a pair of orientation information and movement information are information acquired at the same time in FIG. 7 (a) and (b), or at the same normalized time. Time intervals of the records do not have to be the same. Although a pair of records are acquired at the same time preferably for the accuracy of measuring cross-sectional contour, a certain level of time lag may be accepted. When there is a time lag in acquisition time, the controller 10 may ignore the difference or may calculate information corresponding to the other time from one piece of information.

[0083]

FIG. 9 shows a calculated cross-sectional contour."

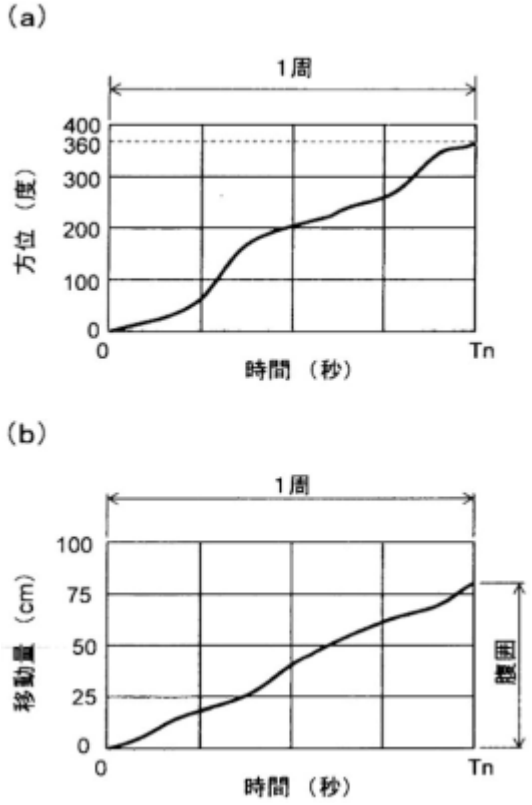
The following matters are described as effects of the above descriptions.

"[0092]

As described above, the device according to the embodiment, cross-sectional contour of a target portion can be measured by a sensor equipped in the smartphone 1. The smartphone 1 is smaller than a measurement apparatus, such as a CT apparatus. The smartphone 1 can measure cross-sectional contour in a short time. The smartphone 1, which can measure data by a user, enables simple measurement. The smartphone 1 can be portable, unlike a CT apparatus. The smartphone 1 can accumulate data by a user, which allows for easy checking of daily changes. The smartphone 1 has low risk of radiation during measurement."

(B) The following drawings are described as FIG. 7, FIG. 8, and FIG. 9.

[FIG. 7]



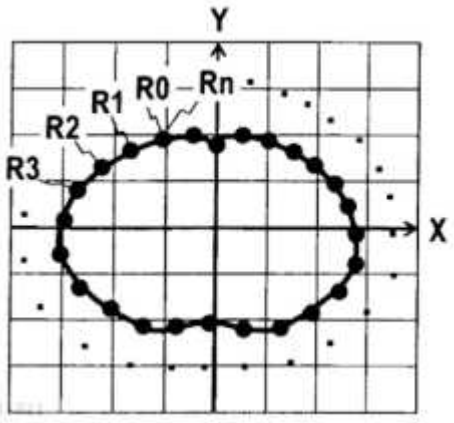
１周	one circumference
方位（度）	direction (degree)
時間（秒）	times (second)
移動量（ｃｍ）	moving amount (cm)
腹囲	abdominal girth

[FIG. 8]

レコード番号	時間（秒）	向き情報（度）	移動情報（cm／sec²）	移動量（cm）
R0	0	0.00	0.00	0.00
R1	T1	2.05	0.85	0.42
R2	T2	3.10	1.52	1.40
R3	T3	5.81	2.65	3.25
⋮	⋮	⋮	⋮	⋮
Rn	Tn	360.00	0.00	82.05

レコード番号　record number
時間（秒）　time (second)
向き情報（度）　orientation information (degree)
移動情報（ｃｍ／ｓｅｃ²）　movement information (cm/sec^2)
移動量（ｃｍ）　moving amount (cm)

[FIG. 9]



(C) The following matters are described regarding estimating a muscle area from the calculated cross-sectional contour.
"[0132]
After correction in step S116, the smartphone 1 extracts feature coefficients of the cross-sectional contour. In this embodiment, Fourier transform is used for extracting

features of contour. By Fourier-transforming a curve for a half of the cross-sectional contour or an inverted closed curve, a Fourier coefficient can be obtained. As is well known, Fourier coefficients of degrees obtained by Fourier analyzing a curve are used as coefficients which represent characteristics of the curve. The degrees of the Fourier coefficient to be used as feature coefficients are determined when estimation formula described below are created. In this embodiment, Fourier coefficients Sa1, Sa2, Sa3, and Sa4 which affect a muscle area are extracted as feature coefficients of the contour. When estimation formula including independent variables as principal components are created, the principal components may be extracted as feature coefficients.

[0133]

The smartphone 1 substitutes the feature coefficients Sa1 to Sa4 extracted in step S117 in the muscle area estimation formula obtained in advance, to estimate a muscle area A of a user (step S118). Equation 1 shows one example of muscle area estimation formula.

[0134]

[Equation 1]

$$A = 20.9 + 108.2 \times Sa_1 - 345.2 \times Sa_2 - 72.6 \times Sa_3 - 224.5 \times Sa_4$$

[0135]

A method of creating the muscle area estimation formula is described later." The method of creating the muscle area estimation formula is described as follows.

"[0142]

In step S121, a creator executes creation of an estimation formula. In step S122, the creator of the estimate expression inputs sample data for a predetermined number of people acquired in advance to a computer. The sample data are data acquired from a predetermined number of sample subjects. Sample data of one subject include at least a muscle area obtained by CT, abdominal circumference measured by a measuring tape, or the like, orientation information, and movement information acquired by the smartphone 1. The predetermined number of people can be any number which is statistically sufficient. Subjects having the same conditions, such as sex, race, age, or the like, may improve the accuracy of estimation.

[0143]

Next, a half of the cross-sectional contour is calculated from the abdominal circumference, orientation information, and movement information input to the computer (step S123). The computed half of the cross-sectional contour is corrected (step S124).

Details of Steps S123 and S124, which are the same processing as steps S115 and S116, are omitted.

[0144]

Next, fourier analysis is executed on a curve for the corrected half of the cross-sectional contour or an inverted closed curve (step S125). A plurality of Fourier coefficients can be obtained by Fourier analyzing the cross-sectional contour. As is well known, Fourier coefficients of degrees obtained by Fourier analyzing a curve are used as coefficients which represent characteristics of the curve. In this embodiment, Fourier analysis is executed on sample data for a predetermined number of people, to obtain X-axis, Y-axis, and 1 to k-th (k is any integer) Fourier coefficients. The Fourier coefficients may be subjected to well-known principal component analysis to reduce the number of degrees. The principal component analysis is an analysis method which searches for common components in multivariate data (multiple Fourier coefficients, in this embodiment) to generate a kind of synthetic variable (principal component), which can represent characteristics of a curve with a smaller number of variables.

[0145]

Next, regression analysis is executed using the Fourier coefficients (or principal component) obtained in step S125 and the muscle area obtained by CT (step S126). The regression analysis is one of statistical techniques which examine relations between resultant numerical values and factor numerical values to clarify the relations. Regression analysis is conducted using data of sample subjects for a predetermined number of people, with the Fourier coefficients as independent variable and the muscle area obtained by CT as dependent variable, to create a muscle area estimation formula."

B Regarding the support requirements

(A) The detailed description of the invention summarized in the above A discloses a technical matter, specifically, of acquiring orientation information by a direction sensor and acquiring movement information by an acceleration sensor using a smartphone, to calculate the cross-sectional contour, extracting feature coefficients (Sa1, Sa2, Sa3, Sa4) from the cross-sectional contour, and substituting the feature coefficients into [Equation 1] to estimate a muscle area of a user, in order to solve the problem that muscle area estimation cannot be simply conducted by CT or biometric impedance method which uses a non-portable device. The technical matter is described in [0006] as [Means for solving the problem] as follows: "In order to solve the problems described above, the muscle area estimation system according to the Invention comprises a measuring instrument comprising a first sensor unit to acquire orientation information of the system and a device

unit to acquire movement information of the system, and a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least partial contour of the human body which is computed based on the orientation information and movement information."

The Amended Invention describes, as summarized in 1 (2), as follows: "A muscle area estimation system comprising: a measuring instrumentto be moved along a human body and comprising at least a sensor unit; and a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least partial contour of the human body which is computed based on information from the sensor unit". The Amended Invention specifies that the "measuring instrument" is "to be moved along a human body and comprises at least a sensor unit", but does not specify that the measuring instrument comprises "means for acquiring orientation information" or "means for acquiring movement information".

(B) Examination

As summarized in A (A) (B), the description in the detailed description of the invention, "a measuring instrument to be moved along a human body and comprising at least a sensor unit", describes only a smartphone which acquires orientation information from a direction sensor and movement information from an acceleration sensor, i.e., a "measuring instrument" comprising "means for acquiring orientation information" and "means for acquiring movement information", and does not describe other devices as "a measuring instrument to be moved along a human body and comprising at least a sensor unit" which provides "information" for "computing" "contours of a human body".

A contour of a human body can be computed by, as described in A (A) (B), including both "means for acquiring orientation information" and "means for acquiring movement information" as "a measuring instrument to be moved along a human body and comprising at least a sensor unit" which provides "information" for "computing" "a contour of a human body". A contour of a human body cannot be computed only by "information" obtained from one of "means for acquiring orientation information" and "means for acquiring movement information". For example, an electronic measuring tape serving as "a measuring instrument to be moved along a human body and comprising at least a sensor unit" can acquire only movement information but cannot acquire orientation information, and cannot compute a contour.

It cannot be also said that a matter of common general technical knowledge that the cross-sectional contour of a human body can be obtained from "a measuring instrument to be moved along a human body and comprising at least a sensor unit" which

does not include both "means for acquiring orientation information" and "means for acquiring movement information" had existed at the retroactive filing date of the application, December 22, 2014, (hereinafter referred to as "at the filing date").

Accordingly, the description of the detailed description of the invention cannot be expanded or generalized to "a measuring instrument to be moved along a human body and comprising at least a sensor unit" which does not include both "means for acquiring orientation information" and "means for acquiring movement information". It cannot be acknowledged that "a measuring instrument to be moved along a human body and comprising at least a sensor unit" which does not include both "means for acquiring orientation information" and "means for acquiring movement information" can solve the problem.

(C) Summary

It cannot be said that the Amended Invention, which is not described in the detailed description of the invention, satisfies the requirements stipulated in Article 36(6)(i) of the Patent Act.

C Regarding clarity

(A) We will also additionally examine the matter described in the Amended Invention, "estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least partial contour of the human body", which is not included in the reasons for refusal stated in the examiner's decision.

In the detailed description of the invention, as described in A (C) [0132] to [0134], a muscle area of a user is estimated by extracting feature coefficients (Sa1, Sa2, Sa3, Sa4) from the cross-sectional contour and substituting the feature coefficients into [Equation 1]. The "shape characteristics" in the Amended Invention are considered to indicate "feature coefficients" in the detailed description of the invention, from the description.

Referring to the method of creating a muscle estimate expression in A(C) [0142] to [0145], the coefficients in [Equation 1], "20.9", "108.2", "345.2", "72.6", and "224.5", are obtained by regression analysis with the Fourier coefficients of degrees obtained by Fourier analyzing a contour of a body of a sample subject and a muscle area obtained by CT. Thus, the "shape characteristics calculated from at least partial contour of the human body" "used" in "estimating a muscle area" are considered to indicate specific numerical values in [Equation 1] acquired from the sample subject.

Furthermore, the interpretation that the "shape characteristics" indicate the feature coefficients (Sa1, Sa2, Sa3, Sa4) and the coefficients in [Equation 1] collectively cannot be denied.

Therefore, the technical meaning of the "shape characteristics" in the Amended Invention, which is not unambiguous, is not clear.

(B) Summary

The description in the Amended Invention, "estimates a muscle area in a cross section of a human body on the basis of shape characteristics", which is technically unclear, does not satisfy the requirements stipulated in Article 36(6)(ii) of the Patent Act.

3 Summary regarding the Amendment

In light of the above, as described in 2 (1), the Amendment, which violates the provisions of Article 17-2(5) of the Patent Act, shall be dismissed under the provisions of Article 53(1) of the Patent Act applied mutatis mutandis by replacing certain terms pursuant to Article 159(1) of the Patent Act.

In addition, even if the amendment according to Claims 1, 4, and 7 is aimed at so-called restriction in a limited way; i.e., the matters stipulated in Article 17-2(5)(ii) of the Patent Act, as described in 2 (2), it cannot be said that the Amended Invention satisfies the requirements stipulated in Article 36(6)(i) or Article 36(6)(ii) of the Patent Act and that the invention could have been patented independently at the time of filing of the patent application. Thus, the Amendment violates the provisions of Article 126(7) of the Patent Act which is applied mutatis mutandis in the provisions of Article 17-2(6) of the Patent Act, and shall be dismissed under the provisions of Article 53(1) of the Patent Act applied mutatis mutandis by replacing certain terms pursuant to Article 159(1) of the Patent Act.

No. 3 Regarding the Invention

1 The Invention

Since the Amendment was dismissed as described above, the inventions according to Claims 1 to 10 of the application are as described in the above 2 1 (1), which is the scope of claims amended by the written amendment submitted on October 31, 2017.

2 Reasons for refusal stated in the examiner's decision

The reasons for refusal stated in the examiner's decision are as follows.

"In the detailed description of the invention, the following inventions are described, with the object of the inventions to provide a muscle area estimation system, device, and muscle area estimation method which can estimate a muscle area through a simple method so that facilities may not be limited for measurement, unlike computer tomography or biometric impedance technique:

a muscle area estimation system comprising a gauge including a first sensor unit to acquire orientation information of the system and a device unit to acquire movement information of the system, and a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least partial contour of the human body which is computed based on the orientation information and movement information;

an device comprising a first sensor unit to acquire orientation information of the system, a device unit to acquire movement information of the system, and a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least partial contour of the human body which is computed based on the orientation information and movement information; and

a muscle area estimation method including a step of acquiring orientation information of the system and movement information of the system, a step of computing, by a control unit, at least partial contour of a human body on the basis of the orientation information and the movement information, a step of calculating shape characteristics from the computed partial of the contour of the human body, and a step of estimating a muscle area in a cross section of the human body on the basis of the shape characteristics.

However, the inventions according to Claims 1 to 10 amended by the amendment of the scope of claims by the written amendment as of October 31, 2017 do not specify an device and method for measuring a contour of a human body. In addition, Claims 8 to 10 do not specify how a muscle area is estimated. Therefore, the inventions according to Claims 1 to10, which include measuring a contour of a human body by a measurement apparatus which is available in limited facilities, such as computer tomography, or estimating a muscle area, obviously do not solve the problem stated by the applicant.

Since the means of solving the problem described in the detailed description of the invention is not reflected in Claims 1 to 10, the inventions according to Claims 1 to 10 may exceed the scope described in the detailed description of the invention.

Therefore, the inventions according to 1 to 10 are not still described in the detailed description of the invention." The reasons for refusal stated in the examiner's decision are that the description of the scope of claims does not satisfy the requirements stipulated in Article 36(6)(i) of the Patent Act.

3 Judgment by the body

(1) Regarding the invention according to Claim 1

The invention according to Claim 1 is, as described in No. 2 1, "a muscle area estimation system comprising a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least a part of contours of the human body" obtained by deleting the underlined portions of the following description in the Amended Invention, "a muscle area estimation system comprising: a measuring instrument to be moved along a human body and comprising at least a sensor unit; and a control unit that estimates a muscle area in a cross section of a human body on the basis of shape characteristics calculated from at least a part of contours of the human body which is computed based on information from the sensor unit". Thus, the invention according to Claim 1 falls under the examination stated in No. 2 2 (2) B "Regarding the support requirements", and it cannot be said that the invention is described in the detailed description of the invention.

The invention according to Claim 1 includes a device which is not equipped with even "a measuring instrument to be moved along a human body and comprising at least a sensor unit" with respect to the Amended Invention. The "contour of a human body" include those obtained not by "a measuring instrument to be moved along a human body and comprising at least a sensor unit", or by CT (computer tomography) or MRI, which require a large-scale apparatus and are not simple methods. Thus, it cannot be said that the invention is acknowledged to solve the problem.

Therefore, the invention according to Claim 1, which is not described in the detailed description of the invention, does not satisfy the requirements stipulated in Article 36(6)(i) of the Patent Act.

(2) Regarding Claims 4 and 7

As described in No. 2 1, Claim 4 is obtained by deleting the descriptions, "a gauge to be moved along a human body and including at least a sensor unit" and "which is computed based on information from the sensor unit", and Claim 7 is obtained by deleting the statements, "a step of moving a measuring instrument comprising at least a sensor unit along a human body" and "on the basis of information from the sensor unit". The inventions fall under the examination stated in No. 2 2 (2) B "Regarding the support requirements". As described in (1), the inventions include a contour of a human body obtained by CT or MRI, which require large-scale apparatus and are not simple methods. Thus, it cannot be said that the inventions are acknowledged to solve the problem.

Therefore, the inventions according to Claims 4 and 7, which are not described in the detailed description of the invention, do not satisfy the requirements stipulated in Article 36(6)(i) of the Patent Act.

(3) Regarding Claims 8 to 10

As described in No. 2 1 (1), regarding estimating a muscle area, the inventions according to Claims 8 and 9 specify only "a control unit for estimating a muscle area", and the invention according to Claim 10 specifies only "a step of estimating a muscle area". They include estimating a muscle area by methods using CT and MRI stated in (1) and an impedance technique that does not provide a contour of a human body. The methods using CT, MRI, or impedance technique require large-scale apparatus and are not simple. Thus, it cannot be said that the inventions are acknowledged to solve the problem.

(4) Summary

The Inventions according to Claims 1, 4, 7 and 8 to 10, and Claims 2, 3, 5 and 6 dependent on Claim 1 or 4 are not described in the detailed description of the invention as stated in the examiner's decision. Therefore, the statement of the scope of claims does not satisfy the requirements stipulated in Article 36(6)(i) of the Patent Act.

No. 4 Closing

As described above, the present application, which does not satisfy the requirements stipulated in Article 36(6)(i) of the Patent Act, should be refused.

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

June 3, 2019

Chief administrative judge: ITO, Masaya
Administrative judge: MISAKI, Hitoshi
Administrative judge: SHIDA, Masao