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EXAMINER

COUSO, JOSE L

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 11/220,373	Applicant(s) KARITO, NOBUHIRO	
	Examiner Jose L. Couso	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/6/05</u> . | 6) <input type="checkbox"/> Other: ____. |

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1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows (see also MPEP 2106):

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

2. Claims 11-12 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 11-12 defines a program and a recording medium, embodying functional descriptive material (i.e., a computer program or computer executable code). However, the claims does not define a "computer-readable medium or computer-readable memory" and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the

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presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory (refer to “note” below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

“A transitory, propagating signal ... is not a “process, machine, manufacture, or composition of matter.” Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter.” (In re Nuijten, 84 USPQ2d 1495 (Fed. Cir. 2007)). Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a “signal”, the claim as a whole would be non-statutory. Should the applicant’s specification define or exemplify the computer readable medium or memory (or whatever language applicant chooses to recite a computer readable medium equivalent) as statutory tangible products such as a hard drive, ROM, RAM, etc, **as well as** a non-statutory entity such as a “signal”, “carrier wave”, or “transmission medium”, the examiner suggests amending the claim to include the disclosed tangible computer readable storage media, while at the same time excluding the intangible transitory media such as signals, carrier waves, etc.

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Merely reciting functional descriptive material as residing on a "tangible" or other medium is not sufficient. If the scope of the claimed medium covers media other than "computer readable" media (e.g., "a tangible media", a "machine-readable media", etc.), the claim remains non-statutory. The full scope of the claimed media (regardless of what words applicant chooses) should not fall outside that of a computer readable medium.

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows (see also MPEP 2106):

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

4. Claims 1-9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 1-9 appear to define an

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apparatus using “means plus function” claim language. However, the specification does not disclose corresponding physical structure associated with each claim element, and the specification does indicate that the invention may be embodied as pure software on page 17, lines 6-13 and page 32, line 22 through page 33, line 7. Therefore, the claims as a whole appears to be nothing more than a collection of software elements, thus defining functional descriptive material per se.

Functional descriptive material may be statutory if it resides on a “computer-readable medium or computer-readable memory”. The claim(s) indicated above lack structure, and do not define a computer readable medium and are thus non-statutory for that reason (i.e., “When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests:

1. Amending the claim(s) to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory (refer to “note” below); or

2. Pointing out where the corresponding structure can be found in the specification that would clearly be indicative of a statutory apparatus, in a 112 6th paragraph sense.

Any amendment to the claim should be commensurate with its corresponding disclosure.

Note: “A transitory, propagating signal ... is not a “process, machine, manufacture, or composition of matter.” Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter.” (*In re Nuijten*, 84 USPQ2d 1495 (Fed. Cir. 2007)).

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a “signal”, the claim as a whole would be non-statutory. Should the applicant’s specification define or exemplify the computer readable medium or memory (or whatever language applicant chooses to recite a computer readable medium equivalent) as statutory tangible products such as a hard drive, ROM, RAM, etc, **as well as** a non-statutory entity such as a “signal”, “carrier wave”, or “transmission medium”, the examiner suggests amending the claim to include the disclosed tangible computer readable storage media, while at the same time excluding the intangible transitory media such as signals, carrier waves, etc.

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Claim 10 is rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Maeda et al. (U.S. Patent No. 5,384,868).

With regard to claim 1, Maeda describes a pixel group reference point determination unit that divides the input image data into predetermined pixel groups and determines a position of a reference point from grayscale values of respective pixels

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

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contained in the pixel groups (see figure 31, element 602 and refer for example to column 23, lines 64-68); a pixel group expansion processing unit that takes the grayscale values of the part that is less than a threshold value from unprocessed pixels in periphery of the pixel group into the pixel group, if total of the grayscale values of the respective pixels contained in the pixel group is less than the threshold value based on each of values of the quantization data (see figure 31, elements 603 and 604 and refer for example to column 24, lines 1-21); and a quantization data supply unit that supplies the quantization data to a pixel on the basis of the position of the reference point determined by the pixel group reference point determination unit (see figure 31, elements 606 and 607 and refer to column 24, line 22 through column 25, line 20).

As to claim 2, Maeda describes a pixel group reference point determination unit that divides the input image data into predetermined pixel groups and determines a position of a reference point from grayscale values of respective pixels contained in the pixel groups (see figure 31, element 602 and refer for example to column 23, lines 64-68); a pixel group expansion processing unit that takes grayscale values of the part that is less than a threshold value from unprocessed pixels in periphery of the pixel group into the pixel group, if total of the grayscale values of the respective pixels contained in the pixel group is less than the threshold value based on each of values of the quantization data (see figure 31, elements 603 and 604 and refer for example to column 24, lines 1-21); a quantization data supply unit that supplies the quantization data to a pixel on the basis of the position of the reference point determined by the pixel group reference point determination unit; and a pulse width modulation unit that

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generates a pulse width of the K stages (K is a positive integer) in accordance with the quantization data supplied by the quantization data supply unit (see figure 31, elements 606 and 607 and refer for example to column 24, line 22 through column 25, line 20).

In regard to claim 3, Maeda describes wherein the pixel group reference point determination unit calculates the product of the pixel positions of the respective pixels and the grayscale values of the respective pixels for all the pixels contained in the pixel group, and determines a value in which a total of the product is divided in the total value of the grayscale values of the respective pixels contained in the pixel group as the position of the reference point (refer for example to column 12, lines 51-57).

With regard to claim 4, Maeda describes wherein the pixel group expansion processing unit takes grayscale values of the unprocessed pixels which is closest position of the reference point determined by the pixel group reference point determination unit into the pixel group (refer for example to column 24, lines 29-36).

As to claim 5, Maeda describes wherein the pixel group reference point determination unit re-determines a position of the reference point on the basis of the pixel position and grayscale values of taken-into unprocessed pixels each time the pixel group expansion processing unit takes the grayscale values of the unprocessed pixels in periphery of the pixel group (refer for example to column 24, lines 42-48).

In regard to claim 6, Maeda describes wherein the quantization data supply unit selects preferentially from the closest pixels to the position of the reference point, and supplies the quantization data to the selected pixels (refer to column 24, lines 49-52).

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With regard to claim 7, Maeda describes wherein the quantization data supply unit supplies a remainder value to the closest pixel from the position of the reference point which is a pixel other than the pixels to which the quantization data is supplied, if the quantization data supply unit supplies the quantization data to the pixel closest to the position of the reference point, in cases where there is the remainder value by subtracting the supplied quantization data from the total value of the grayscale values of the respective pixels contained in the pixel group (refer to column 22, lines 7-16).

As to claim 8, Maeda describes wherein the pixel group expansion processing unit takes grayscale values of the part that is less than the threshold value from unprocessed pixels in periphery of the pixel group into the pixel group, if the grayscale value of the pixel to which the remainder value is supplied by the quantization data supply unit is less than the threshold value (refer to column 25, lines 57-68).

In regard to claim 9, Maeda describes a pixel group reference point determination unit that divides the input image data into predetermined pixel groups and determines a position of a reference point from grayscale values of respective pixels contained in the pixel groups (see figure 31, element 602 and refer for example to column 23, lines 64-68); a pixel group expansion processing unit that takes grayscale values of the part that is less than a threshold value from unprocessed pixels in periphery of the pixel group into the pixel group, if total of the grayscale values of the respective pixels contained in the pixel group is less than the threshold value based on each of values of the quantization data (see figure 31, elements 603 and 604 and refer for example to column 24, lines 1-21); and a quantization data supply unit that supplies

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the quantization data to a pixel on the basis of the position of the reference point determined by the pixel group reference point determination unit (see figure 31, elements 606 and 607 and refer for example to column 24, line 22 through column 25, line 20), wherein the difference of angle forming arrangement direction of the pixel group between any two colors among the plurality of colors is substantially 30° (refer for example to column 25, lines 57-68).

With regard to claim 10, Maeda describes a pixel group reference point determination step of dividing the input image data into predetermined pixel groups and determining a position of a reference point from grayscale values of respective pixels contained in the pixel groups (see figure 31, element 602 and refer for example to column 23, lines 64-68); a pixel group expansion processing step of taking grayscale values of the part that is less than a threshold value from unprocessed pixels in periphery of the pixel group into the pixel group, if total of the grayscale values of the respective pixels contained in the pixel group is less than the threshold value based on each of values of the quantization data (see figure 31, elements 603 and 604 and refer for example to column 24, lines 1-21); and a quantization data supply step of supplying the quantization data to a pixel on the basis of the position of the reference point determined by the pixel group reference point determination step (see figure 31, elements 606 and 607 and refer to column 24, line 22 through column 25, line 20).

As to claim 11, Maeda describes an image processing program that converts input image data to output image data having two or more types of quantization data and outputs the output image data, the program causing a computer to execute (see

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figure 39 and refer for example to column 27, lines 34-56) a pixel group reference point determination step of dividing the input image data into predetermined pixel groups and determining a position of a reference point from the grayscale values of respective pixels contained in the pixel groups (see figure 31, element 602 and refer for example to column 23, lines 64-68); a pixel group expansion processing step of taking grayscale values of the part that is less than a threshold value from unprocessed pixels in periphery of the pixel group into the pixel group, if total of the grayscale values of the respective pixels contained in the pixel group is less than the threshold value based on each of values of the quantization data (see figure 31, elements 603 and 604 and refer for example to column 24, lines 1-21); and a quantization data supply step of supplying the quantization data to a pixel on the basis of the position of the reference point determined by the pixel group reference point determination step (see figure 31, elements 606 and 607 and refer for example to column 24, line 22 through column 25, line 20).

In regard to claim 12, Maeda describes a recording medium that can be read by a computer on which the image processing program of claim 11 is recorded (see figure 39 and refer for example to column 27, lines 34-56).

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Maeda et al., Bovik et al., Pullen et al. and Kojima all disclose systems similar to applicant's claimed invention.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose L. Couso whose telephone number is (571) 272-7388. The examiner can normally be reached on Monday through Friday from 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner, can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jose L. Couso/
Primary Examiner, Art Unit 2624
January 5, 2009