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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HUAKUN HUANG

Appeal 2011-010693
Application 11/907,324
Technology Center 2600

Before THU A. DANG, JAMES R. HUGHES,
and GREGORY J. GONSALVES, *Administrative Patent Judges*.

DANG, *Administrative Patent Judge*.

DECISION ON APPEAL

I. STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from a Final Rejection of claims 1-8. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

A. INVENTION

Appellant's invention is directed to an image pickup apparatus and method device having a unit that detects skin color, another unit that eliminates the skin color from a face detected within an image, and a white balance gain control that uses the information supplied by the unit to adjust the image using the derived white balance gain values (Abstract).

B. ILLUSTRATIVE CLAIM

Claim 1 is exemplary:

1. An image pickup apparatus for picking up an image by using a solid-state image sensing device, the image pickup apparatus comprising:

a color component acquiring unit that acquires picked-up-image color-component signals representing color components of the picked-up image;

a face detecting unit that detects a face from the picked-up image;

a skin-color-region color-component acquiring unit that, when the picked-up image includes a face, acquires skin-color-region color-component signals based on a face detection result;

a skin-color-eliminated-component-signal-information creating unit that creates skin-color-eliminated component-signal information obtained by eliminating the skin-color-

region color-component signals, obtained by the skin-color-region color-component acquiring unit, from the picked-up-image color-component signals obtained by the color component acquiring unit;

a white-balance-gain setting unit that sets a white balance gain by using the skin-color-eliminated component-signal information; and

a white balance control unit that performs white balance adjustment of the color components of the picked-up image by using the white balance gain.

C. REJECTION

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Miki	US 7,542,077 B2	Jun. 02, 2009 (filed Oct. 25, 2005)
Kawaguchi	US 7,573,505 B2	Aug. 11, 2009 (filed Mar. 31, 2005)

Claims 1-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Miki in view of Kawaguchi.

II. ISSUES

The dispositive issues before us are whether the Examiner has erred in determining that the combination of Miki and Kawaguchi teaches or would have suggested a unit that “*creates skin-color-eliminated component-signal information obtained by eliminating the skin-color-region color-component signals,*” a unit that sets “a white balance gain by using the skin-color-eliminated component-signal information,” and a unit that performs “white

balance adjustment” by using the white balance gain (claim 1, emphasis added).

III. FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

Miki

1. Miki discloses an image capturing device having a white balance adjustment device for adjusting white balance of an input image; wherein, the device includes a block dividing circuit 12 that divides an image into blocks, a color range determining circuit 13 that detects the color associated with pixels within each block (determining whether each pixel is associated with an object and setting a flag for each pixel of an apparent object color), and a representative value calculating circuit 14 that calculates a representative value for each block using an average value of pixels within the block excluding pixels identified as a pixel of an apparent object color (Fig. 1; Abstract; col. 4, ll. 29-66).

2. The device maps pixels to particular color ranges associated with objects such as, the blue sky color range 400, a skin color range 402, a leaf color range 404, and a flower color range 406; wherein, when a pixel’s color is within one of the particular ranges, the system identifies the pixels (a cluster) as an apparent object associated with that range (Fig. 10, col. 10, ll. 44-57).

3. The device is capable of using images of a face as a subject for mapping correction (Fig. 11, col. 11, ll. 4-12).

4. The representative value calculating circuit 14 provides input into a white balance evaluating circuit 16 that calculates white balance gains (R_{gain} , G_{gain} , and B_{gain}) from the weighted average supplied using the representative values of the blocks (Fig. 1, col. 2, l. 58 – col. 3, l. 25 and col. 4, l. 65 – col. 5, l. 6).

5. A white balance adjusting circuit 20 adjusts the image captured based upon the white balance gain values (Fig. 1, element 20).

Kawaguchi

6. Kawaguchi discloses an image capturing apparatus having a face region determination unit 16 that detects the region of a man's face by using the video data of the first frame obtained after setting the face detection mode (Abstract; col. 7, ll. 60-67).

IV. ANALYSIS

Claims 1-8

Appellant contends that “Miki ... fails to disclose, teach or suggest ‘a skin-color-region color-component acquiring unit that, when the picked-up image includes a face, acquires skin-color-region color-component signals based on a face detection result’” (App. Br. 15). Appellant argues that “[t]hough the representative value calculating circuit 14 according Miki ... uses an average value of only remaining pixels other than pixels identified as a pixel of an apparent object color to calculate a representative value for each block, there is **no mention** of eliminating the skin-color-region color-component signals, obtained by the skin-color-region color-component acquiring unit, from the picked-up-image color-component signals obtained by the color component acquiring unit” (App. Br. 17). Appellant contends

further that “[t]here is also **no mention** of a white-balance-gain setting unit that sets a white balance gain by using the skin-color-eliminated component-signal information; and a white balance control unit that performs white balance adjustment of the color components of the picked-up image by using the white balance gain in Miki” (*id.*).

However, the Examiner finds that Miki discloses that “images of a face of a person are used as a subject for mapping correction” and “the position of skin-color signals can be determined based on a face detection result” (Ans. 12). The Examiner notes that “[t]he only difference [between the claim and the teaching of Miki] is that, in the claim, the elimination of skin-color-region color-component signal is performed after integrating all pixels, while in Miki this is performed before integrating the pixels” (Ans. 13).

We give the claim its broadest reasonable interpretation consistent with the Specification. *See In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). Claim 1 does not place any limitation on what “skin-color-eliminated-component-signal” information and “skin-color-region color-component” signals mean, include, or represent other than a “skin-color-eliminated-component-signal-information” creating unit creates the information by eliminating the signals obtained by a “skin-color-region color-component” acquiring unit.

We find “skin-color-region color component” signals comprise data relating to color that is acquired and find “skin-color-eliminated-component-signal” information merely comprises data that is generated as a result of eliminating the acquired data relating to color. However, we find that what type of acquired data being eliminated (excluded) does not change or limit

how the unit generates the data and what type of generated data being used to set the white balance gain does not change or limit how the gain is set. Rather, these terms are merely descriptions of the types of data that are excluded and used to set the gain respectively.

When descriptive material is not functionally related to the claimed medium, the descriptive material will not distinguish the invention from the prior art in terms of patentability. *See In re Ngai*, 367 F.3d 1336, 1339 (Fed. Cir. 2004) and *In re Gulack*, 703 F.2d 1381, 1385 (Fed. Circ. 1983). We therefore give “a skin-color-eliminated-component-signal-information creating unit that creates skin-color-eliminated component-signal information obtained by eliminating the skin-color-region color component signals, obtained by the skin-color-region color-component acquiring unit” its broadest reasonable interpretation as a device that eliminates/subtracts a first set of data relating to color from the captured image data to generate resultant data (a second set of data), as consistent with the Specification and claim 1.

Miki discloses adjusting white balance of an input image which includes dividing an image into blocks, detecting the color associated with pixels within each block (determining whether each pixel is associated with an object and setting a flag for each pixel of an apparent object color), and calculating a representative value for each block using an average value of pixels excluding flagged pixels identified as a pixel of an apparent object color (FF 1). Groups of pixels are mapped to particular color ranges associated with objects such as, the sky, skin, a leaf, and a flower (FF 2), wherein images of a face can be used as a subject for mapping correction (FF 3). A representative value calculating circuit provides input into a white

balance gain calculating circuit that calculates white balance gains from the weighted average supplied using the representative values of the blocks (FF 4). The white balance adjusting circuit adjusts the image captured based upon these white balance gain values (FF 5).

We find the representative value calculating circuit which excludes flagged pixels associated with an apparent object color to be a device that subtracts a first set of data relating to color from the captured image data to generate resultant data. That is, we find that Miki's image capturing device process step of excluding flagged pixels of an apparent object color comprises "a skin-color-eliminated-component-signal-information creating unit that creates skin-color-eliminated component-signal information obtained by eliminating the skin-color-region color component signals, obtained by the skin-color-region color-component acquiring unit" (claim 1).

We also find that the white balance gain calculating circuit calculates white balance gains by using the data representative of exclusion of the data relating to the pixels associated with an apparent object color. In particular, we find that the Miki's white balance circuit comprises "a white-balance-gain setting unit that sets a white balance gain by using the skin-color-eliminated component-signal information" (claim 1). We find further that the white balance adjusting circuit comprises a unit that adjusts the color components of the picked-up image by using the white balance gain values. That is, we find that Miki's white balance adjusting circuit comprises "a white balance control unit that performs white balance adjustment of the color components of the picked-up image by using the white balance gain" (claim 1).

In addition, Kawaguchi discloses an image capturing apparatus having a face region determination unit that detects the region of a man's face (FF 6). We find that the face region determination unit detects a face from the image. That is, we find that Kawaguchi's face region determination unit comprises "a face detecting unit that detects a face from the picked-up image" (claim 1).

In view of our claim construction above, we find that the combination of Miki and Kawaguchi *at least suggests* providing "a skin-color-eliminated-component-signal-information creating unit that creates skin-color-eliminated component-signal information obtained by eliminating the skin-color-region color component signals, obtained by the skin-color-region color-component acquiring unit," as specifically required by claim 1.

Although Appellant also argue that "[i]n Applicant's invention, two component types of color information are acquired while the color range determining circuit 13 of Miki ... only acquires one component type of color information" (App. Br. 16), such argument is not commensurate in scope with the specific language of claim 1. In particular, claim 1 does not recite such acquisition of "two component types of color information" (*id.*) as Appellant argues.

Accordingly, we find that Appellant has not shown that the Examiner erred in rejecting claim 1 under 35 U.S.C. § 103(a) over Miki in view of Kawaguchi. Further, independent claims 5-8 having similar claim language and claims 2-4 (depending from claim 1), which have not been argued separately, fall with claim 1.

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V. CONCLUSION AND DECISION

The Examiner's rejection of claims 1-8 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

peb