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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* KOUICHI HARADA, ATSUSHI KOBAYASHI,  
SEIJI KOBAYASHI, TOMOO MITSUNAGA,  
and HIROAKI ONO

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Appeal 2012-005448  
Application 12/073,402  
Technology Center 2600

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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

Appellants appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 1, 3, 5, 7-11, and 13-15 (App. Br. 3). Claims 2, 4, 6, and 12 have been canceled (*id.*). We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

### A. INVENTION

Appellants' invention is directed to a driving control method and apparatus of a camera that controls a solid state imaging device such as a Charge Coupled Device (CCD) for the purpose of eliminating continuous storage of unnecessary charges due to dark current; wherein, a low and high-sensitivity pixel signal are read out at different times where the low-sensitivity pixel is read out to a first side of the charge transfer section and transferred to a second-side before the high-sensitivity pixel signal is read out to the first side of the charge transfer section (Abstract; Spec. 4:11-16, 6:1-14, and 7:8-16).

### B. ILLUSTRATIVE CLAIM

Claim 1 is exemplary:

1. For use in an imaging device having arranged therein plural charge generating sections that acquire signal charges corresponding to intensity of an inputted electromagnetic wave and including a charge transfer section that transfers the signal charges acquired by the charge generating sections in a predetermined direction, a method for acquiring a high-sensitivity pixel signal and a low-sensitivity pixel signal and creating an output image by properly using the high-sensitivity pixel signal and the low-sensitivity pixel signal to expand a dynamic range, the method comprising:

acquiring at least one of the high-sensitivity pixel signal and the low-sensitivity pixel signal while acquiring a signal charge corresponding to the high-sensitivity pixel signal independently from acquiring a signal charge corresponding to the low-sensitivity pixel signal by setting an exposure period for a charge storage time for acquiring the high sensitivity pixel signal different from the exposure period for a charge storage time for acquiring the low-sensitivity pixel;

reading out signal charges generated by a charge generating section for the low-sensitivity pixel signal to a first side of the charge transfer section at a first timing corresponding to a first portion of the exposure period;

transferring the signal charges of the low-sensitivity pixel signal to a second side of the charge transfer section;

reading out a signal charge generated by a charge generating section for the high-sensitivity pixel signal to the first side of the charge transfer section at a second timing corresponding to a second portion of the exposure period; and

transferring the signal charges of the high-sensitivity pixel signal to the second side of the charge transfer section.

### C. REJECTION

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

Tamaru

US 7,508,421 B2

Mar. 24, 2009

Claims 1, 3, 5, 8-11, and 13-15 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Tamaru.

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamaru.

## II. ISSUES

The dispositive issues before us are whether the Examiner has erred in determining that the Tamaru teaches a method that includes “*reading out signal charges generated by a charge generating section for the low-sensitivity pixel signal to a first side of the charge transfer section at a first timing corresponding to a first portion of the exposure period*” “*transferring the signal charges of the low-sensitivity pixel signal to a second side of the charge transfer section;*” and “*reading out a signal charge generated by a charge generating section for the high-sensitivity pixel signal to the first side of the charge transfer section at a second timing corresponding to a second portion of the exposure period*” (claim 1, emphasis added).

## III. FINDINGS OF FACT

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

### *Tamaru*

1. Tamaru discloses a pixel arrangement for a solid-state image sensor 11; wherein, a vertical transfer path transfers the signal charge read out of each pixel in the vertical direction (Fig. 2; col. 7, ll. 22-31).
2. The individual pixel 1 is divided into a low speed pixel 2 occupying about one fifth of the total area of pixel 1 and a high speed pixel 3 occupying the remaining area of pixel 1; wherein, the individual low speed pixel 2 and the individual high speed pixel 3 are separately read out and transferred to the vertical transfer path ((Fig. 2; col. 7, ll. 32-40).

3. First, a CPU 15 picks up a low sensitivity image of a scene with a high shutter speed, and afterwards picks up a high sensitivity image of the same scene using a low shutter speed (col. 11, ll. 52-54).

4. A CCD as the image sensor picks up a scene using high sensitivity and low sensitivity photoreceptors PD1 which transfer signals in the vertical direction to the vertical transfer electrodes VEL or horizontal transfer electrodes HEL (Fig. 9; col. 14, ll. 18-24; col. 15, ll. 40-45).

#### IV. ANALYSIS

##### *Claims 1, 3, 5, 8-11, and 13-15*

Appellants contend that Tamaru “simply sets up the order in which the low sensitivity image and high sensitivity image are picked up and how [they] are then transferred;” however, for the “claimed invention, after the first readout period, the exposure of the image is continued while the low-sensitivity pixel signals are transferred from one side of the CDD to another side of the CCD at a first timing corresponding to the first portion of the exposure period” (App. Br. 17). Appellants argue that “[t]hough Tamaru discloses how vertical transfer electrodes VEL are arranged so as to circumvent the aperture parts AP formed in the front surface of the photoreceptors PD1 and take out signals (charge) from the photoreceptors PD1 and transfer the signals in the vertical direction, there is no mention of transferring the signal charges of the low-sensitivity pixel signal to a second side of the charge transfer section in Tamaru” (App. Br. 19). Appellants finally contend that “there is no mention of reading out a signal charge generated by a charge generating section for the high-sensitivity pixel signal to the first side of the charge transfer section at a second timing

corresponding to a second portion of the exposure period; and transferring the signal charges of the high-sensitivity pixel signal to the second side of the charge transfer section” (App. Br. 21).

However, the Examiner finds that Tamaru discloses “that the first side location is considered to the location vertically in the vertical transfer path next to the pixel” (Ans. 11) and that Tamaru discloses “that the charge is transferred vertically down to the lowest position” where “[t]he lowest position ... is considered to [be] the second side” (Ans. 11-12). The Examiner notes that “the ‘exposure of the image is continued’ limitation that [A]ppellant[s] argue[] is not found in the claims;” rather, “the claims recite ‘different from the exposure period’ which the examiner considered in the rejection of the claims” (Ans. 11).

Appellants’ argument that “after the first readout period, the exposure of the image is continued while the low-sensitivity pixel signals are transferred from one side of the CDD to another side” is not commensurate in scope with the specific language of claim 1 (App. Br. 17). In particular, claim 1 does not recite such “exposure of the image [being] continued” as Appellants argue.

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 define an “exposure period,” and the Specification merely discloses various mechanisms which provide exposure modes, where the exposure time of each light-receiving element is changed using an electronic shutter function (Spec. 3: 16-22). Thus, we give “reading out signal charges generated by a charge generating section for the low-sensitivity pixel signal to a first side of the charge transfer section at a first

timing corresponding to a first portion of the exposure period” its broadest reasonable interpretation as reading out low-sensitivity pixel signals at any time when the charge transfer section is exposed, as consistent with the Specification and claim 1.

Further, claim 1 does not limit when the “first portion” or the “second portion of the exposure period” exists. Thus, we give “reading out a signal charge generated by a charge generating section for the high-sensitivity pixel signal to the first side of the charge transfer section at a second timing corresponding to a second portion of the exposure period” its broadest reasonable interpretation as reading out a high-sensitivity pixel signal at *any* time when the charge transfer section is exposed.

Tamaru discloses a pixel arrangement for a solid-state image sensor; wherein, the pixels include a low speed pixel portion and a high speed pixel portion that are read out separately and transferred to a vertical transfer path (FF 1 and 2). In particular, a CPU picks up a low sensitivity image of a scene with a high shutter speed, and afterwards picks up a high sensitivity image of the same scene using a low shutter speed (FF 3). The CCD (image sensor) picks up a scene using high sensitivity and low sensitivity photoreceptors PDI which transfer signals in the vertical direction to the vertical transfer electrodes VEL or horizontal transfer electrodes HEL (FF 4).

We find that the low speed pixel portion to be the low-sensitivity pixel signal that is read out at any time when the charge transfer section is exposed. We find further the high speed pixel portion represents the high-sensitivity pixel signal that is read out at any time when the charge transfer section is exposed. In addition, we find that the signal charges are

transferred from one side of the pixel arrangement to another, either vertically or horizontally

In view of our claim construction above, we find that Tamaru discloses “reading out signal charges generated by a charge generating section for the low-sensitivity pixel signal to a first side of the charge transfer section at a first timing corresponding to a first portion of the exposure period;” “transferring the signal charges of the low-sensitivity pixel signal to a second side of the charge transfer section;” and “reading out a signal charge generated by a charge generating section for the high-sensitivity pixel signal to the first side of the charge transfer section at a second timing corresponding to a second portion of the exposure period,” as required by claim 1.

Accordingly, we find that Appellants have not shown that the Examiner erred in rejecting claim 1 under 35 U.S.C. § 102(e) over Tamaru. Further, independent claims 3 and 5 having similar claim language and claims 8-11 and 13-15 (depending from claim 5) which have not been argued separately, fall with claim 1.

### *Claim 3*

Because our affirmance of the rejection of claims 1, 3, 5, 8-11, and 13-15 as anticipated by Tamaru is dispositive as to the claims on appeal, we do not reach the Examiner’s cumulative rejection of claim 3 based on obviousness over Tamaru.

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#### V. CONCLUSION AND DECISION

The Examiner's rejection of claims 1, 3, 5, 8-11, and 13-15 under 35 U.S.C. § 102(e) is affirmed.

Claim 7 stands rejected 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

PGC