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| 80883   | 7590        | 09/27/2013           | EXAMINER            |                  |
| Covidien I.P.<br>ATTN: IP Legal<br>6135 Gunbarrel Avenue<br>Boulder, CO 80301 |             |                      | DALBO, MICHAEL J    |                  |
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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JAMES OCHS

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Appeal 2013-007478  
Application 12/605,739  
Technology Center 2800

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Before RICHARD E. SCHAFER, DEBORAH KATZ, and HUNG H. BUI,  
*Administrative Patent Judges.*

BUI, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellant<sup>1</sup> seeks our review under 35 U.S.C. § 134(a) of the Examiner's final rejection of claims 1-20. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.<sup>2</sup>

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<sup>1</sup> The real party of interest is Nellcor Puritan Bennett Ireland, LLC.

<sup>2</sup> Our decision refers to Appellant's Appeal Brief filed January 21, 2013 ("App. Br."); Reply Brief filed May 20, 2013 ("Reply Br."); Examiner's Answer mailed March 19, 2013 ("Ans."); Final Office Action mailed July 19, 2012 ("Final Rej."); and the original Specification filed October 26, 2009 ("Spec").

## STATEMENT OF THE CASE

### *Appellant's Invention*

Appellant's invention relates to systems and methods for processing oximetry signals from a patient to determine physiological information using a least median squares (LMS) technique. *See* Spec., ¶ [0001] and Abstract.

### *Claims on Appeal*

Claims 1, 9, and 17 are the independent claims on appeal. Claim 1 is illustrative of Appellant's invention and is reproduced below with disputed limitations emphasized:

1. A method for determining information from a signal, comprising:
  - receiving, from a first sensor, a first electronic signal;
  - receiving, from a second sensor, a second electronic signal;
  - using processor equipment for:
    - generating a Lissajous figure based at least in part on the first and second electronic signals,
    - determining information from at least the Lissajous figure based at least in part on **a least median squares [LS] technique***; and
    - outputting the information to an output device.

### *Evidence Considered*

|       |                    |               |
|-------|--------------------|---------------|
| Mortz | US 6,385,471 B1    | May 07, 2002  |
| Chin  | US 2007/0299328 A1 | Dec. 27, 2007 |

Humberto Barreto, "An Introduction to Least Media of Squares," *in* Economics via Monte Carlo Simulations (2001) (Hereinafter "Barreto").

*Examiner's Rejections*

(1) Claims 1-7, 9-15, and 17-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chin and Barreto. Final Rej. 2-6.

(2) Claims 8 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chin, Barreto and Mortz. Final Rej. 6-7.

*Issues on Appeal*

Based on Appellant's arguments, the dispositive issue on appeal is whether the Examiner erred in rejecting claims 1-7, 9-15, and 17-20 under 35 U.S.C. § 103(a) as being unpatentable over Chin and Barreto. In particular, the issue turns on:

(1) Whether the Examiner has provided an objective reason to replace a conventional least squares (LS) technique of Chin with a least median squares (LMS) technique of Barreto to arrive at Appellant's invention. App. Br. 10-12.

(2) Whether Barreto teaches away from replacing a conventional least squares (LS) technique of Chin with a least median squares (LMS) technique of Barreto. App. Br. 13.

ANALYSIS

**§103 Rejection of Claims 1-7, 9-15, and 17-20 over Chin and Barreto**

The Examiner finds Chin discloses all elements of Appellant's independent claims 1, 9, and 17, using a conventional least squares (LS) technique instead of a least median squares (LMS) technique. Final Rej. 2-3. The Examiner also finds Barreto discloses: (1) the differences between the least squares (LS) technique and the least median squares (LMS)

technique as regression algorithms, i.e., the LS technique is more accurate when analyzing clean data, whereas LMS technique is more robust when outliers are present, and (2) the LMS technique can be used in lieu of the LS technique to improve the robustness of the regression analysis, i.e., less sensitive to outliers. *Id.* at 3 (citing Barreto, page 2, last paragraph and page 5, 1<sup>st</sup> paragraph). Based on such factual findings, the Examiner concludes that it would have been obvious to replace the LS technique of Chin with the LMS technique of Barreto to further reduce the effect of outliers of Chin's data as both the LS and LMS techniques are well-known, interrelated regression techniques with different advantages and disadvantages. *Id.*, also see Advisory Action mailed November 7, 2012, page 3.

Appellant contends that there is no objective reason to replace a conventional LS technique of Chin with an LMS technique of Barreto to arrive at Appellant's invention. App. Br. 10-12. In particular, Appellant argues that while the Lissajous figure from Chin's FIG. 11B shows some noise or error, Chin's signals do not include outliers. *Id.*, at 11 (emphasis in original). Because Chin's signals do not include outliers, there is no reason or motivation to replace Chin's LS technique with Barreto's LMS technique. *Id.*

We are not persuaded by Appellant's arguments. As an initial matter, we note that an outlier is nothing more than a single, aberrant data point that typically occurs away from a fitted line during a linear regression analysis. See Barreto, page 2, ll. 15-17. Outliers are not shown in Chin because FIG. 11A and FIG. 11B are intended to provide a comparison of an output waveform and a Lissajous plot of a standard sensor and Chin's sensor, and not measurement signals that are subject to noise and/or outliers. See Chin,

¶¶ [0035] and [0060]. As correctly noted by the Examiner, a single Lissajous figure from Chin does not provide evidence that the invention of Chin is not vulnerable to the occurrence or effect of outliers. Ans. 5. Rather, Chin discloses non-invasive optical blood sensor arranged to reduce the likelihood of out-of-phase motion signals that may cause outliers. Ans. 4-5 (citing Chin, ¶¶ [0017], [0020] and [0050]). As acknowledged by Appellant's own Specification, many measurement signals, including physiological signals as disclosed by Chin, are routinely subject to noise and outliers. *See Spec.*, ¶ [0003]. Likewise, Barreto makes reference to outliers as the basis upon which the differences between the least squares (LS) technique and the least median squares (LMS) technique are described, i.e., the LS technique is more accurate when analyzing clean data, whereas LMS technique is more robust when outliers are present. *See Barreto*, page 15.

In view of such disclosures, we find that the combination of Chin and Barreto involves nothing more than a simple substitution of well known, interrelated regression LS and LMS techniques to yield predictable results. *See KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). We agree with the Examiner that these teachings, all in the context of Appellant's invention, are properly combinable. Ans. 7.

Separately, Appellant also contends that Barreto teaches away from replacing a conventional LS technique of Chin with a LMS technique of Barreto when outliers are not present. App. Br. 13. In particular, Appellant argues that because Chin's signals do not have outliers and are less noisy than Barreto's clean data, Barreto teaches away from replacing Chin's LS technique with a LMS technique. *Id.*

We are not persuaded. As discussed, outliers are associated with Chin's signals. Ans. 7-9; *also see* Chin, ¶ [0050]. Moreover, our reviewing court has said:

A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant.

*In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) (citing *United States v. Adams*, 383 U.S. 39, 52 (1966)).

A reference does not teach away, however, if it merely expresses a general preference for an alternative invention but does not "criticize, discredit, or otherwise discourage" investigation into the invention claimed. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

In this instant appeal, Barreto simply describes the differences between the least squares (LS) technique and the least median squares (LMS) technique, i.e., the LS technique is more accurate when analyzing clean data, whereas LMS technique is more robust when outliers are present, as correctly found by the Examiner. Final Rej., at 3 (citing Barreto, page 2, last paragraph and page 5, 1<sup>st</sup> paragraph). Appellant has not presented any evidence or arguments to persuade us that Barreto would disparage or otherwise discourage one of ordinary skill in the art from the path described in the claims of the application, i.e., the subject matter of Appellant's

claimed invention. Thus, we do not find that Barreto teaches away from the claimed invention.

For the reasons set forth above, we find no reversible error in the Examiner's position and, as such, sustain the Examiner's obviousness rejection of claims 1-7, 9-15, and 17-20 over Chin and Barreto.

With respect to dependent claims 8 and 16, Appellant presents no separate patentability arguments. For the same reasons discussed, we also sustain the Examiner's obviousness rejection of claims 8 and 16.

### CONCLUSION

On the record before us, we conclude that the Examiner has not erred in rejecting: (1) claims 1-7, 9-15, and 17-20 under 35 U.S.C. § 103(a) as being unpatentable over Chin and Barreto and (2) claims 8 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Chin, Barreto and Mortz.

### DECISION

As such, we AFFIRM the Examiner's final rejection of claims 1-20.

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