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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|-----------------------|---------------------|------------------|
| 15/024,705  | 03/24/2016  | James Alexander GAMEI | 468190US8X PCT      | 1095             |
| 22850   | 7590        | 09/03/2020            | EXAMINER            |                  |
| OBLON, MCCLELLAND, MAIER & NEUSTADT, L.L.P.<br>1940 DUKE STREET<br>ALEXANDRIA, VA 22314 |             |                       | LUO, KATE H         |                  |
|   |             |                       | ART UNIT            | PAPER NUMBER     |
|   |             |                       | 2488                |                  |
|   |             |                       | NOTIFICATION DATE   | DELIVERY MODE    |
|   |             |                       | 09/03/2020          | ELECTRONIC       |

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JAMES ALEXANDER GAMEI and KARL JAMES SHARMAN

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Appeal 2019-006073  
Application 15/024,705  
Technology Center 2400

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Before JENNIFER S. BISK, JASON J. CHUNG, and  
DAVID J. CUTITTA II, *Administrative Patent Judges*.

BISK, ADMINISTRATIVE PATENT JUDGE.

DECISION ON APPEAL<sup>1</sup>

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>2</sup> appeals from the  
Examiner's decision to reject claims 30–41, 44, and 47–49.<sup>3</sup> *See* Final

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<sup>1</sup> Throughout this Decision we have considered the Specification filed March 24, 2016 (“Spec.”), the Final Rejection mailed September 26, 2018 (“Final Act.”), the Appeal Brief filed March 28, 2019 (“Appeal Br.”), the Examiner’s Answer mailed June 12, 2019 (“Ans.”), and the Reply Brief filed August 12, 2019 (“Reply Br.”).

<sup>2</sup> We use the term “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Sony Corporation. Appeal Br. 2.

<sup>3</sup> Claims 42, 43, 45, and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form

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Act. 1. We have jurisdiction under 35 U.S.C. § 6(b). An oral hearing took place on August 27, 2020 and a transcript will be added to the record in due course.

We REVERSE.

#### CLAIMED SUBJECT MATTER

The claims are directed to video data encoding and decoding. Claim 30, reproduced below, is illustrative of the claimed subject matter:

30. A video data encoding apparatus configured to encode an array of input video data values, the apparatus comprising:

a differential pulse code modulation (DPCM) coder implemented by circuitry and configured to apply a differential pulse code modulation operation to the array of input video data values to generate an array of DPCM data values;

a quantizer implemented by the circuitry and configured to quantize data derived from the DPCM data values; and

a controller implemented by the circuitry and configured to control selection of a rounding operation by the quantizer from two or more candidate rounding operations,

*the selected rounding operation being associated with a scan order of the array of DPCM data values, such that any DPCM data value in the scan order does not have a dependency on a DPCM data value provided later in the scan order.*

Appeal Br. 12 (Claims App.) (emphasis added).

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including all of the limitations of the base claim and any intervening claims.  
Final Act. 13.

## REFERENCES

The prior art relied upon by the Examiner is:

| Name               | Reference            | Date           |
|--------------------|----------------------|----------------|
| Lee                | U.S. 2005/0063462 A1 | March 24, 2005 |
| Chen               | U.S. 2009/0122868 A1 | May 14, 2009   |
| Gharavi-Alkhansari | U.S. 2011/0292247 A1 | Dec. 1, 2011   |
| Lu                 | U.S. 2012/0307890 A1 | Dec. 6, 2012   |

## REJECTIONS

The Examiner rejects claims 30–36, 44, and 47–49 under 35 U.S.C. § 103 as being unpatentable over Gharavi-Alkhansari, Lu, and Lee. Final Act. 3–10.

The Examiner rejects claims 37–41 under 35 U.S.C. § 103 as being unpatentable over Gharavi-Alkhansari, Lu, Lee, and Chen. Final Act. 10–13.

## OPINION

We review the appealed rejections for error based upon the issues identified by Appellant, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential). To the extent Appellant has not advanced separate, substantive arguments for particular claims, or other issues, such arguments are waived. 37 C.F.R. § 41.37(c)(1)(iv).

We have considered all of Appellant’s arguments and any evidence presented. We highlight and address specific findings and arguments for emphasis in our analysis below.

### *Rejection of Claims 30–36, 44, and 47–49*

The Examiner rejects claims 30–36, 44, and 47–49 as obvious over the combination of Gharavi-Alkhansari, Lu, and Lee. Final Act. 3–10. In

particular, the Examiner cites to all three references as teaching or suggesting at least of a portion of “the selected rounding operation being associated with a scan order of the array of DPCM data values, such that any DPCM data value in the scan order does not have a dependency on a DPCM data value provided later in the scan order” (“the selected rounding limitation”) as recited by claim 30.<sup>4</sup> *Id.* at 3–4 (citing Gharavi-Alkhansari ¶¶ 23–24; Lu Fig. 1, ¶ 26); Ans. 16–17 (citing Gharavi-Alkhansari Figs. 1, 6, ¶¶ 21–24, 40; Lee Fig. 2, ¶¶ 10–15).

Because the Specification does not define explicitly the selected rounding limitation, the Examiner broadly construes the limitation such that “any scan order after quantization is associated with quantization factor or rounding operation.”<sup>5</sup> Ans. 16. The Examiner then asserts that Gharavi-Alkhansari “clearly shows that each block DPCM data is independently and don’t have dependency on any DPCM data value of other blocks.” *Id.* at 17 (citing Gharavi-Alkhansari Fig. 4). The Examiner adds that Lee discloses a scanning method similar to those shown in Figure 24b, 25b, and 26b of the Specification. *Id.* (citing Lee Fig. 2, ¶¶ 10–15). The Examiner relies on Lu as showing rounding. Final Act. 4. Based on these disclosures and the

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<sup>4</sup> Independent claims 48 and 49 recite substantially similar limitations.

<sup>5</sup> The Examiner also states that paragraph 135 of the Specification discusses *residual* differential pulse code modulation data (“RDPCM”) rather than DPCM data as recited in the selected rounding limitation. Ans. 16. The Examiner does not explain how this difference affects the rejection. *Id.* The Patent Trial and Appeal Board is a review body, rather than a place of initial examination. We leave to the Examiner whether to consider the appropriateness of further rejection(s) under 35 U.S.C. § 112. Although the Board is authorized to reject claims under 37 C.F.R. § 41.50(b), no inference should be drawn when the Board elects not to do so. *See* Manual of Patent Examining Procedure (MPEP) § 1213.02.

broad construction of the selected rounding limitation, the Examiner concludes that it would have been obvious “to modify the teachings of Gharavi-Alkhansari with Lu and Lee to perform a zigzag scan on the quantization blocks from a top-left corner to a bottom-right corner before entropy encoding, the motivation being to improve the video encoding performance and efficiency.” Ans. 18.

Appellant argues that the rejection does not show obviousness of the selected rounding limitation sufficiently. Appeal Br. 6–11; Reply Br. 2–6. Appellant notes that, as described in the Specification, a common feature of scan orders that meet the requirement of the selected rounding operation is that they are based on a forward, rather than a reverse, scan order. Appeal Br. 10–11 (citing Spec. Figs. 24b, 25b, 26b, ¶ 135). Appellant, therefore, objects to the Examiner’s construction of the selected rounding limitation as including “any scan order after quantization,” because a qualifying scan order must at least exclude reverse scans. Reply Br. 4–5.

Moreover, Appellant argues that Gharavi-Alkhansari discloses only one scanning order and therefore does not teach or suggest selecting a rounding operation associated with a particular scan order. *Id.* at 4. With respect to Lu, Appellant asserts that “at best, Lu appears to select a rounding offset adaption component 150 from a list based on either a rate distortion optimization component or a resolution of the frame being compressed,” and therefore does not address the selected rounding limitation. Appeal Br. 8–9 (citing Lu ¶ 26). With respect to Lee, Appellant asserts that Lee describes scanning “in a zigzag shape from a top-left corner to a bottom-right corner,” and therefore “clearly identifies a dependency between prior blocks and subsequent blocks.” *Id.* at 9–10; *see also* Reply Br. 6 (stating that “Lee describes coding using a square of 8 x 8 values, which necessarily requires

that some values later in the scanning order be used to generate the DPCM values.”).

Finally, Appellant asserts that a person of ordinary skill in the art would not have been motivated to combine “the zigzag scan of Lee with the raster scan of [Gharavi-Alkhansari]” to achieve the claimed selected rounding limitation. *Id.* at 10.

We agree with Appellant that the Examiner does not explain sufficiently how or why a person of ordinary skill in the art would combine the rounding operation disclosed by Lu with the scanning orders disclosed by Gharavi-Alkhansari and Lee. Even assuming that both Gharavi-Alkhansari and Lee teach or suggest a scanning order such that any DPCM data value in the scan order does not have a dependency on a DPCM data value provided later in the scan order, the Examiner does not address how or why a person of ordinary skill would select a rounding operation associated with that scanning order.

To the extent that the Examiner is relying on a broad construction of the selected rounding limitation, and, in particular, to the term “associated,” to provide the connection of the selected rounding operation in Lu to the sorting orders disclosed by Gharavi and/or Lee, we agree with Appellant that the Examiner’s construction is unreasonable. Based on the plain wording of the claims, the selected rounding operation must be associated with a scan order that “does not have a dependency on a DPCM data value provided later in the scan order.” We agree with Appellant that not all scan orders after quantization qualify. Moreover, the Examiner’s construction appears to read the term “associated” out of the claim. In any event, the rejection must at least address how the selected sorting operation disclosed by Lu is associated with a scan order disclosed by Gharavi and/or Lee.

Accordingly, we are not persuaded that the Examiner has shown sufficiently that the selected rounding limitation would have been obvious over the combination of Gharavi-Alkhansari, Lu, and Lee. We, therefore, do not sustain the Examiner's rejection of independent claims 30, 48, and 49 or of claims 31–36, 44, and 47, which depend from claim 30.

*Claims 37–41*

Claims 37–41 depend indirectly from claim 30. The Examiner rejects these claims under 35 U.S.C. §103, as obvious over Gharavi-Alkhansari, Lu, Lee, and Chen. Final Act. 10–13. However, because the Examiner relies on the rejections for claims 30 and 34 for the inherited limitations, including the selected rounding limitation, the rejection of these claims suffers from the same problems as those discussed above. *See* Final Act. 10 (incorporating the rejection of claim 34 into the rejection of claim 37). Accordingly, we also do not sustain the rejection of claims 37–41.

CONCLUSION

We reverse the Examiner's rejections.

DECISION SUMMARY

| <b>Claim(s)</b>            | <b>35 U.S.C. §</b> | <b>Basis/Reference(s)</b>                | <b>Affirmed</b> | <b>Reversed</b>     |
|----------------------------|--------------------|--|-----------------|---------------------|
| 30–36, 44,<br>47–49        | 103                | Gharavi-<br>Alkhansari, Lu,<br>Lee       |                 | 30–36, 44,<br>47–49 |
| 37–41                      | 103                | Gharavi-<br>Alkhansari, Lu,<br>Lee, Chen |                 | 37–41               |
| <b>Overall<br/>Outcome</b> |                    |  |                 | 30–41, 44,<br>47–49 |



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REVERSED