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EXAMINER

MAHMUD, FARHAN

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BARIN GEOFFRY HASKELL

Appeal 2015-004406
Application 12/896,552¹
Technology Center 2400

Before ELENI MANTIS MERCADER, JAMES R. HUGHES, and
JOHN D. HAMANN, *Administrative Patent Judges*.

HAMANN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant files this appeal under 35 U.S.C. § 134(a) from the Examiner’s Final Rejection of claims 1–50. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

THE CLAIMED INVENTION

Appellant’s claimed invention relates to “video coding system[s] using interpolation filters as part of motion-compensated coding.” Spec. ¶ 1. Claim 1 is illustrative of the subject matter of the appeal and is reproduced below.

¹ According to Appellant, the real party in interest is Apple Inc. App. Br. 3.

1. A codebook management method comprising, at a video processing device:
 - decoding coded pixel block data according to motion compensated prediction techniques to generate decoded video data,
 - calculating characteristics of an ideal interpolation filter based on the decoded video data, the ideal interpolation filter calculated with a cross-correlation matrix and an autocorrelation matrix between uncoded pixel block data and the decoded pixel block data,
 - adding the calculated characteristics to a codebook stored at the video processing device for use with later received pixel blocks, the codebook storing a plurality of characteristics for alternate filters, the characteristics including filter configuration data that defines the operation of the interpolation filter.

REJECTIONS ON APPEAL

(1) The Examiner rejected claims 1–3, 14–22, 28–34, and 45–50 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Motta et al. (US 2010/0002770 A1; published Jan. 7, 2010) (hereinafter “Motta”) and Wittmann et al. (US 2010/0021071 A1; published Jan. 28, 2010) (hereinafter “Wittmann”).

(2) The Examiner rejected claims 4–10, 23–27, and 35–41 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Motta, Wittmann, and Le Meur et al. (US 2005/0031211 A1; published Feb. 10, 2005) (hereinafter “Le Meur”).

(3) The Examiner rejected claims 11–13 and 42–44 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Motta, Wittmann, and Sekiguchi et al. (US 2009/0003717 A1; published Jan. 1, 2009) (hereinafter “Sekiguchi”).

DISPOSITIVE ISSUE ON APPEAL

The dispositive issue for this appeal is whether the Examiner errs in finding the cited portions of Motta teach or suggest “calculating characteristics of an ideal interpolation filter,” as recited in claims 1 and 28, and similarly recited in claims 14, 45, and 46.

ANALYSIS

We find Appellant’s arguments persuasive with respect to the cited portions of Motta failing to teach or suggest the above dispositive, disputed limitation.

Appellant argues the combination, and Motta in particular, fails to teach or suggest the above disputed limitation. App. Br. 13. Specifically, Appellant argues Motta instead teaches having “all the potential filters . . . already available and [selecting] a filter . . . from among the available filters” — no characteristics of an ideal filter are calculated. App. Br. 12–13 (citing Motta ¶¶ 56–59); Reply Br. 2 (citing Motta Fig. 4 (showing step 54 “[c]ompute[s] an error for each block with every combination of filters available,” step 55 “[d]etermines cost of encoding filter coefficients,” and step 56 “[d]etermines best combination of filters”)).

In addition, Appellant argues the Examiner’s reliance on Motta’s teachings regarding generating interpolated frames is misplaced because such teachings rely on the already available filters. *See* App. Br. 12 (quoting Motta ¶ 56 (“[T]he interpolated frames are generated in real-time *as long as* the original (non-interpolated) frames, the interpolating filters and *the filter choices are available.*”)). Similarly, Appellant argues the filter decision unit — cited by the Examiner — instead “receives interpolated reference frames,

determines the error corresponding to the use of different filters, selects between available filters for each pixel[,] and produces a decision vector that minimizes bit error rate and distortion.” App. Br. 13 (citing Motta ¶¶ 56–59). Appellant thus contends Motta’s teachings regarding generating interpolated frames also fails to teach or suggest “calculating the characteristics of an *ideal filter*, where only a single filter is calculated to be applied to the reference pixel block.” *Id.*

The Examiner finds the combination, and Motta in particular, teaches or suggests the above disputed limitation. *See* Ans. 3–5. Specifically, the Examiner finds Motta teaches or suggests determining the cost of encoding using the available filters — including calculating adaptive filter coefficients — and deciding on a best combination of filters which minimizes both error and cost. *See* Ans. 4 (citing Motta ¶¶ 66, 56; Fig. 4). The Examiner then finds that “the final decided filter choice represents a unique filter which is the combination of the most efficient filters for each full and sub-pixel position of the frame being processed,” and that the “determination of a unique and efficient filter for each frame is interpreted to mean the exact same thing as” the disputed limitation (i.e., “calculating characteristics of an ideal interpolation filter”). Ans. 4 (citing Motta ¶¶ 56 (finding the filter decision unit also illustrates the disputed limitation), 66).

We are persuaded by Appellant’s pertinent arguments. We agree with Appellant that the Examiner cited portions of Motta fail to teach or suggest calculating characteristics of an ideal (interpolation) filter, which is a single filter having ideal characteristics. Rather, Motta teaches determining costs from using already available filters and deciding on a best combination of available filters which minimizes both error and cost. *See, e.g.*, Motta

¶¶ 56–59, 66; Fig. 4. Furthermore, we disagree that determining from among the available filters the chosen filter combination having the least error and cost in accordance with Motta’s teachings teaches or suggests calculating characteristics of an ideal filter. Rather, choosing the best combination of available filters to minimize error — minimal is not ideal — differs substantively from calculating a *single* filter having *ideal* characteristics (e.g., numerous calculations need to be made to select a minimizing combination from among the available filters rather than calculating once the characteristics of an ideal filter). *See id.*

Accordingly, we do not sustain the Examiner’s § 103(a) rejection of claims 1, 14, 28, 45, and 46, as well as claims 2–13, 15–27, 29–44, and 47–50, which depend from one of these claims.

DECISION

We reverse the Examiner’s decision rejecting claims 1–50.

REVERSED