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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 YING CHEN, MARTA KARCZEWICZ, and
YE-KUI WANG

———————————

Appeal 2018-000980[1]
Application 14/449,034
Technology Center 2400

———————————

Before CAROLYN D. THOMAS, ADAM J. PYONIN, and
MICHAEL J. ENGLE, *Administrative Patent Judges.*

PYONIN, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from a final

rejection of claims 1–20, all of the pending claims. We have jurisdiction

under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] Qualcomm Incorporated is identified as the real party in interest. App.
Br. 3.

STATEMENT OF THE CASE

Introduction[2]

The Application is directed to "techniques for coding video data . . .

where a picture size for a group of pictures in the video sequence may be

coded based on an aligned coding unit size for the video sequence." Spec.

¶ 6. Claims 1, 7, and 13 are independent. Claim 1 is reproduced below for

reference:

> 1. A method of encoding video data comprising:
>
> determining a smallest coding unit size for a video sequence, the video sequence comprising a plurality of pictures, each of the plurality of pictures including a respective plurality of largest coding units (LCUs) including a respective plurality of coding units, each of the coding units corresponding to a respective node of a respective quadtree data structure, and each of the coding units including syntax elements defining prediction data and residual data for a plurality of samples of the corresponding coding unit, and the smallest coding unit size being the smallest coding unit size of a plurality of different coding unit sizes of the coding units used to encode the plurality of pictures, the plurality of different coding unit sizes including at least three coding unit sizes, the smallest coding unit size being smaller than a size of the LCUs;
>
> encoding the respective quadtree data structures, comprising encoding split flags of the quadtree data structures representing whether the coding units corresponding to the quadtree data structures are partitioned into smaller coding units;
>
> determining a multiple of the smallest coding unit size that represents a picture size associated with the video sequence;
>
> signaling the smallest coding unit size in sequence level syntax information in a video bitstream for the video sequence;
>
> encoding the coding units of the plurality of pictures, each of the coding units having one of the plurality of different coding

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[2] An appeal was filed for Patent "Application No. 13/550,384 that may be considered related to this appeal." App. Br. 3.

unit sizes, such that a first coding unit of the coding units has a
first size of the plurality of different coding unit sizes and a
second coding unit of the coding units has a second, different size
of the plurality of different coding unit sizes, and encoding the
coding units comprising encoding, for each of the coding units,
the syntax elements defining the prediction data and the residual
data for the plurality of samples of the corresponding coding
units; and

signaling the multiple of the smallest coding unit size in
the sequence level syntax information in the video bitstream as
the picture size, the multiple multiplied by the smallest coding
unit size signaled in the sequence level syntax information
yielding the picture size.

References and Rejections

Claims 1–20 stand rejected under 35 U.S.C. § 101 as being directed to
ineligible subject matter. Final Act. 9.

Claims 1–20 stand rejected under 35 U.S.C. § 103(a) as being
unpatentable over Lin (US 2006/0072669 A1; Apr. 6, 2006) and Huang (US
2012/0106652 A1; May 3, 2012). Final Act. 11.

ANALYSIS

We have reviewed the Examiner's rejections in light of Appellants'
arguments, considering only those arguments Appellants actually raised in
the Briefs. *See In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) ("it has
long been the Board's practice to require an applicant to identify the alleged
error in the examiner's rejections"). We are not persuaded the Examiner's
rejections are in error.

I.   35 U.S.C. § 101

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. The Supreme Court, however, has long interpreted § 101 to include an implicit exception: laws of nature, natural phenomena, and abstract ideas are not patentable. *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). The Supreme Court, in *Alice*, reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Labs., Inc.*, 566 U.S. 66, 79 (2012), "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S. Ct. at 2355. The first step in that analysis is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts," e.g., to an abstract idea. *Id.* If the claims are directed to a patent-ineligible concept, the inquiry proceeds to the second step, where the elements of the claims are considered "individually and 'as an ordered combination,' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Id.*

Noting that "the two stages involve overlapping scrutiny of the content of the claims," the Federal Circuit has described

> the first-stage inquiry as looking at the "focus" of the claims, their "'character as a whole,'" and the second-stage inquiry (where reached) as looking more precisely at what the claim elements add—specifically, whether, in the Supreme Court's terms, they identify an "'inventive concept'" in the application of the ineligible matter to which (by assumption at stage two) the claim is directed.

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Electric Power Grp., LLC v. Alstom S.A., 830 F.3d 1350, 1353 (Fed. Cir. 2016) (internal citations omitted).

Analyzing the claims under step one of the two-step framework laid out in *Alice*, the Examiner determines the claims are "directed toward formatting data by a basic mathematical manipulation, indicating picture size data and coding unit size data with respect to the same number, an abstract idea." Final Act. 9 (emphasis omitted). The Examiner determines "[t]here is no limitation as to range or how the smallest coding unit size is selected" to be "used as a multiple for encoding both the larger coding units and the picture resolution." Ans. 3 (emphasis omitted). Proceeding with step two of the *Alice* framework, the Examiner determines the claims do not recite additional elements that provide "meaningful limitations beyond generally linking the use of an abstract idea to a particular technological environment, in this case the implementation of this mathematical operation on a computer in the context of established video coding standards." Final Act. 9.

Appellants argue the Examiner's rejection is in error, because "Appellant[s'] claims are not directed to selecting a smallest coding unit size. Instead, claim 1, for example, is directed to determining what the actual smallest coding unit size for a video sequence is." Reply Br. 7 (emphasis omitted). Appellants contend that the claims, thus, "improve[] the technology of video coding," and "the claims include additional elements that amount to significantly more than a judicial exception itself." App. Br. 10 (internal quotation marks omitted).

Appellants do not separately argue the claims. *See* App. Br. 15. We select claim 1 as representative of the group, and discuss each step of the rejection with respect to the *Alice* framework, below. *See* 37 C.F.R. § 41.37(c)(1)(iv).

A. Alice Step One

We find the Examiner does not err in concluding the claims are directed to a judicially-recognized abstract idea. Claim 1 recites steps of determining, encoding, and signaling, as part of a "method of encoding video data." We agree with the Examiner that the claims are "directed toward formatting data by a basic mathematical manipulation, indicating picture size data and coding unit size data with respect to the same number." Final Act. 9; *see also* Reply Br. 7–8 ("Appellant[s'] claim 1 is directed to signaling data indicating what the actual smallest coding unit size is, as well as a picture size that is a multiple of the smallest coding unit size"). Such a concept is abstract, as our reviewing court has held that encoding and decoding image data is abstract. *See RecogniCorp, LLC v. Nintendo Co., Ltd.*, 855 F.3d 1322, 1326 (Fed. Cir. 2017) ("the abstract idea of encoding and decoding image data"); *see also Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340–41 (Fed. Cir. 2017) (organizing, displaying, and manipulating data encoded for human- and machine-readability is directed to an abstract concept); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014). Accordingly, we agree with the Examiner that claim 1 is directed to an abstract idea. *See* Ans. 4–5.

We are unpersuaded by Appellants' arguments that the claims contain a technical improvement and are similar to the claims in *Enfish*. *See* App.

Br. 10 (citing *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016)). In *Enfish*, "the plain focus of the claims is on an improvement to [the] computer functionality itself." *Enfish*, 822 F.3d at 1336. In contrast, we do not find a claimed focus on an improvement to the computer functionality here. Appellants point to the Specification, which states that "[i]n order to increase coding efficiency of the video sequence, it may be useful to determine the smallest coding unit size for the video sequence and specify a picture size for the group of pictures." Spec. ¶ 21; *see also* App. Br. 10. Yet the Specification provides no explanation of why such benefit would exist, other than the bare assertion; nor does the Specification explain how such coding size would yield a benefit to the computer functionality itself. Neither Appellants nor the Specification explain how the claimed process is more efficient than existing and well-known coding techniques. *See* Ans 6; Spec. ¶¶ 3–5; Huang ¶¶ 3, 31. Moreover, claim 1 does not recite *how* to determine a smallest coding size or *how* to determine a multiple of the smallest coding unit size that represents a picture size associated with the video sequence, further underscoring that claim 1 is directed to a desired result rather than a concrete technical solution. *See, e.g., Affinity Labs of Texas, LLC v. Amazon.com Inc.*, 838 F.3d 1266, 1271 (Fed. Cir. 2016). Accordingly, Appellants do not provide sufficient evidence or technical reasoning to persuade us the Examiner errs in determining the claimed invention does not include "improvements to another technology or technical field" or "improvements to the structure of the computer itself." Ans. 6; *see also RecogniCorp*, 855 F.3d at 1327 (internal citations omitted) ("Unlike *Enfish*, claim 1 does not claim a software method that improves the

functioning of a computer," rather "[i]t claims a 'process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool'").

Accordingly, we agree with the Examiner that claim 1 is directed to an abstract concept. *See* Ans. 4–5.

B. Alice Step Two

We are not persuaded the claims recite significantly more than the abstract concept. As explained above with respect to the first step of the *Alice* analysis, there is insufficient evidence on the record before us to persuasively show the claims improve an existing technological process. Further, claim 1 is not a technology-based solution; rather the claim recites an algorithm that may be performed by generic computing equipment. *See* Spec. ¶¶ 96–99 (providing the hardware, software, and combinations thereof can be implemented in a wide variety of devices); *RecogniCorp*, 855 F.3d at 1328 ("[C]laim 1 is directed to the abstract idea of encoding and decoding. The addition of a mathematical equation that simply changes the data into other forms of data cannot save it."); *cf. DDR Holdings*, 773 F.3d at 1258 ("not all claims purporting to address Internet-centric challenges are eligible for patent").

We agree with the Examiner that the limitations relied upon by Appellants, such as the "specific way of coding (encoding or decoding) data representative of the picture size" are part of the abstract idea itself. App. Br. 11; *see* Final Act. 4, 9; *see also RecogniCorp*, 855 F.3d at 1326 ("the abstract idea of encoding and decoding image data"). Moreover, the Supreme Court has instructed that "limiting the use of an abstract idea to a particular technological environment" cannot transform a patent-ineligible abstract idea into a patent-eligible invention. *Alice*, 134 S. Ct. at 2358

(internal citation and quotation marks omitted); *see also Affinity Labs of Texas, LLC v. DirecTV, LLC*, 838 F.3d 1253, 1259 (Fed. Cir. 2016). Here, Appellants do not persuasively show the claim recites an inventive concept that is significantly more than the recited abstract idea.

Thus, Appellants do not persuade us claim 1 recites elements that transform the nature of the claim into a patent-eligible application.

C.   *Preemption*

Appellants also argue "the claims of the present Application do not seek a monopoly over the alleged abstract idea of 'formatting picture size data,'" as "[i]nstead, the pending claims recite a specific way of coding (encoding or decoding) data representative of a picture size." App. Br. 11 (emphasis omitted).

We are unpersuaded of Examiner error. As discussed above, we conclude the claimed way of coding is part of the abstract idea itself. *See* Ans. 3–6. Further, preemption is not the sole test for patent eligibility, and any questions on preemption in the instant case have been resolved by the above analysis. As our reviewing court has explained: "questions on preemption are inherent in and resolved by the § 101 analysis," and, although "preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility." *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015); *cf. OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) ("[T]hat the claims do not preempt all price optimization or may be limited to price optimization in the e-commerce setting do not make them any less abstract").

II.   35 U.S.C. § 103(a)

Appellants argue the Examiner's obviousness "rejection is in error because Lin in view of Huang fails to disclose all of the elements of Appellant[s'] claims," "and there would have been no apparent reason that would have caused one of ordinary skill in the art to modify the techniques described by Lin in view of Huang to arrive at the claimed features." App. Br. 15. Particularly, Appellants contend the following:

> The Examiner has yet to provide any evidence of a method including, e.g., signaling a multiple of a smallest coding unit size in sequence level syntax information in a video bitstream as a picture size, as having existed in the prior art. The Examiner has instead relied upon Lin, which expressly discloses signaling a coded width and coded height of a picture in "units of 2 pixels," which are not smallest coding units as set forth in Appellant[s'] claim 1.

Reply Br. 13 (emphasis omitted).

We are not persuaded the Examiner errs. The Examiner finds, and we agree, that the combination of Lin and Huang teaches or suggests the limitations of claim 1:

> at the time of invention, it would have been obvious to one of ordinary skill in the art to modify Lin to: (1) encode the respective quadtree data structures, comprising encoding split flags of the quadtree data structures representing whether the coding units corresponding to the quadtree data structures are partitioned into smaller coding units; (2) signal the smallest coding unit size in sequence level syntax information, and (3) adopt the coding unit (CU) as HEVC nomenclature and functional substitute for a block structure of MPEG and H.264 standards, as taught in Huang, in order to provide a more flexible block partitioning and encoding structure for encoding video using the HEVC standard.

Ans. 13–14 (citing Huang ¶ 31).

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Appellants' Specification explains that, "[f]or block-based video coding, a video slice (i.e., a video frame or a portion of a video frame) may be partitioned into video blocks, which may also be referred to as treeblocks, coding units (CUs) and/or coding nodes," and the smallest coding unit "may refer to the smallest coding unit size used to code a picture when several possible CU sizes are available." Spec. ¶¶ 4, 43. Appellants do not show that the claimed "smallest coding unit," in light of the Specification, is distinguishable from Lin's teaching of "resolution being a multiple of a ma[]croblock (16 pixel), sub-macroblock (8 pixel), a pixel itself, 2-pixel units, 'or other sets of pixels.' Lin, Paragraphs 10, 17, 48-50, 82-84, and 91."[3] Ans. 6 (emphasis omitted); *see also* Final Act. 12, 13 ("[Lin] specifies the coded width of the frames within the entry point segment in units of 2 pixels,[] corresponding to multiples of signaled coding units defined by pixels and groups of pixels"). Nor do Appellants persuade us the Examiner errs in finding Lin teaches signaling coding information. *See* Final Act. 12–13; Ans. 13; Lin ¶¶ 48–50, 55, 82–86.

Huang, as correctly found by the Examiner, combines with Lin by teaching the "quad-tree structures being power of 2 divisible blocks of pixels such as macroblocks, sub-macroblocks, 2-pixels, and pixels of Lin, and teaches that this size can be communicated with the encoded video." Ans. 7; *see also* Final Act. 14; Huang Figs. 1, 3, ¶ 32. Although Appellants argue that Lin discloses a "fixed unit size" (App. Br. 19), Huang discloses that "[t]he partitioning of coding units may be based on a quadtree structure to

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[3] We note Huang discloses "[i]n H.264 video coding standard, the underlying video frames are divided into slices, where each slice consists of non-overlapping macroblocks as the smallest coding unit." Huang ¶ 33.

partition the coding unit into four smaller coding units of equal size . . . . until it reaches the smallest CU (SCU)." Huang ¶ 31. Similarly, although Appellants argue that Lin's unit of two pixels "does not include syntax elements defining prediction data and residual data, contrary to the coding unit defined by Appellant[s'] claim 1" (App. Br. 18; *see also id.* at 19, 20), the Examiner instead modifies Lin as "using the HEVC standard" from Huang, specifically HEVC's coding unit structure. Ans. 13–14.

Appellants present alternative proposed combinations of Lin and Huang. *See, e.g.*, Reply Br. 13 ("the system resulting from the combination of Lin and Huang would continue to signal a CODED_ WIDTH value and a CODED_ HEIGHT value as a multiple of a unit of 2 pixels"); *see also* Reply Br. 16. Appellants, however, do not provide sufficient technical reasoning or argument to persuade us the Examiner's findings, with regard to how one of ordinary skill in the art would have combined the references, is in error. Rather, we agree with the Examiner that one of ordinary skill would have combined Lin and Huang "in order to provide a more flexible block partitioning and encoding structure for encoding video using the HEVC standard." Ans. 14. The Examiner's findings are reasonable, as "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton" (*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007)), who is not "compelled to adopt every single aspect of . . . [a reference's] teaching without the exercise of independent judgment" (*Lear Siegler, Inc. v. Aeroquip Corp.*, 733 F.2d 881, 889 (Fed. Cir. 1984)). Thus, we do not find the Examiner's combination of Lin and Huang "represented an unobvious step over the prior art." *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007).

Accordingly, we sustain the Examiner's obviousness rejection of independent claim 1. Appellants advance no further substantive arguments for the remaining claims. *See* App. Br. 24–29. Thus, we sustain the obviousness rejection of claims 2–20 for the reasons discussed above.

DECISION

The Examiner's decision rejecting claims 1–20 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