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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/627,885	09/26/2012	Brijesh Tripathi	5888-89900	4336

81310   7590   11/23/2018
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EXAMINER
YODICHKAS, ANEETA

ART UNIT	PAPER NUMBER
2627	

NOTIFICATION DATE	DELIVERY MODE
11/23/2018	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 BRIJESH TRIPATHI

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Appeal 2018-000569
Application 13/627,885
Technology Center 2600

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Before BARBARA A. BENOIT, CHRISTA P. ZADO, and
AMBER L. HAGY, *Administrative Patent Judges*.

ZADO, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] files this appeal under 35 U.S.C. § 134(a) from the
Examiner's final rejection of claims 1–22. We have jurisdiction under
35 U.S.C. § 6(b).

We reverse.

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[1] Appellant identifies Apple Inc. as the real party in interest. App. Br. 2.

STATEMENT OF THE CASE[2]

The Specification and claims generally disclose methods and systems for providing pixels to a graphics display at a clock rate corresponding to an effective refresh rate that is nearest to and below the display's target refresh rate. Spec. ¶ 8. The Specification discloses that the closest equivalent to a refresh rate for a display is its frame rate, which is often locked at an exact number, such as 60 frames per second, or 60 Hz. *Id.* ¶¶ 6, 33. The Specification states, however, that it may be impossible to implement a pixel clock rate that facilitates delivery of pixels to the display at an exact refresh rate of 60 Hz, depending on "display resolution parameters and available options for pixel clock rate of a given design." *Id.* ¶ 6; *id.* ¶ 33 ("[T]here might be no way to implement a pixel clock rate . . . that would yield a refresh rate of 60 Hz."). The Specification discloses "a method may be employed to match the target refresh rate [e.g., 60 Hz in the above example] while providing pixels to the graphics display at the implemented pixel clock rate," wherein the implemented pixel clock rate corresponds to what the Specification calls an effective refresh rate. *Id.* ¶ 8; *id.* ¶ 33 (disclosing designing the system to provide pixels to display 160 at a pixel clock rate that effectively results in a display refresh rate of 60 Hz). The method includes adding additional "dummy" or blank pixels to image frames such that when data for the combined image pixel data and additional pixel data is

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[2] Rather than repeat the arguments here, we refer to the Appeal Brief and Reply Brief for the positions of Appellant and the Final Office Action and Answer for the positions of the Examiner. Only those arguments actually made by Appellant have been considered in this decision. Arguments that Appellant did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv).

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delivered to the display at the pixel clock rate, the frame delivery rate matches the display's target refresh rate. *Id.* ¶¶ 8–9, 35–38. The number of additional pixels added to an image frame is calculated based at least on (1) the effective refresh rate, (2) the target refresh rate, and (3) the pixel resolution of the image frame. *Id.* ¶¶ 8–9, 34, 38. The dummy/blank pixels are interpreted by the display as errors, and therefore, ignored by the display. *Id.* ¶ 38.

Claims 1, 3, 4, and 5 are exemplary:

1. A method for matching refresh rates for a graphics display, the method comprising:

providing, by a display controller circuit, image pixel values representative of respective pixels of an image frame at an implementable pixel clock frequency that corresponds to an effective display refresh rate that is nearest to and lower than a target display refresh rate;

providing, by the display controller circuit, additional pixel values representative of a first number of additional pixels for the image frame at the implementable pixel clock frequency; and

receiving, by a display driver circuit, the image pixel values and the additional pixel values for displaying the respective pixels of the image frame on the graphics display according to the target display refresh rate.

3. The method of claim 2, further comprising displaying the respective pixels of the image frames on the graphics display without displaying the first number of additional pixels, responsive to the display driver circuit driving the graphics display.

4. The method of claim 1, wherein the additional pixels are blank pixels.

5. The method of claim 1, wherein the first number for the first number of additional pixels is based at least on the

effective display refresh rate, the target display refresh rate, and a pixel resolution of the image frame.

PRIOR ART RELIED UPON IN THE REJECTIONS

| US 2013/0141642 A1 | Wu | June 6, 2013 |
| US 2008/0055342 A1 | Liao | Mar. 6, 2008 |

THE REJECTIONS

The Examiner maintains "[e]very ground of rejection set forth" in the office action from which the appeal is taken. Ans. 2–16; *see also* Final Act. 2–16 (office action from which the appeal is taken, setting forth grounds of rejection).

Claims 1–22 stand rejected under 35 U.S.C. § 101 as being directed to ineligible subject matter. Ans. 2–5.

Claims 1, 2, 5, 6, and 9 stand rejected under 35 U.S.C. § 102(e) as anticipated by Wu. Ans. 5–7.

Claims 3, 4, 7, 8, and 10–22 stand rejected under 35 U.S.C. § 103(a) as obvious over the combination of Wu and Liao. Ans. 7–16.

ANALYSIS

1. 35 U.S.C. § 101—Subject matter eligibility

Section 101 of title 35 of the United States Code defines the subject matter eligible for patent protection. 35 U.S.C. § 101. The Supreme Court in *Alice Corp. Pty. Ltd. v. CLS Bank Intern.*, 134 S. Ct. 2347 (2014), held § 101 contains an implicit judicial exception: "[l]aws of nature, natural phenomena, and abstract ideas." *Id.* at 2354. In applying the exception, the Court stated "we must distinguish between patents that claim the 'buildin[g] block[s]' of human ingenuity and those that integrate the building blocks

into something more, thereby 'transform[ing]' them into a patent-eligible invention." *Id.* (alterations in original) (citations omitted).

The Examiner rejects claims 1–22 under § 101 as being directed to a judicial exception, namely an abstract idea, without adding significantly more. Ans. 2–5. Relying on *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016), the Examiner finds the claims are directed to "nothing more than the abstract idea of using categories to organize, store and transmit information." *Id.* at 2–4, 17. The Examiner finds, moreover, that the claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception on grounds that the claimed graphics display, display controller circuit, and display driver circuit, are generic components that are well known in the industry and perform well-known functions. *Id.*

Appellant argues the claims on appeal are not directed to a judicial exception. App. Br. 6. In particular, Appellant argues the claims are not directed to an abstract idea in which the claimed components are used merely as a tool, but instead are directed to an improvement over existing display controllers and display drivers. *Id.* at 7–9 (stating "the first step in the *Alice* inquiry . . . asks whether the focus of the claims is on the specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool" (emphasis omitted) (quoting *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016))). According to Appellant, the display controller and display driver circuit do more than collect and analyze information and display the results—the display controller controls graphics displays and the display driver drives video display. App. Br. 7. Appellant

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argues further that the display controller of the claims includes novel functionality that represents an improvement over other display controllers. *Id.* at 8. The alleged novel functionality includes a solution that permits the display controller to provide pixels to a display at an effective refresh rate, without having to provide pixels at the refresh rate of the target display, which the Specification states may not be possible to achieve. *Id.*

We are persuaded by Appellant's arguments. We find persuasive the argument that the claims are not directed to using computers merely as a tool to perform abstract ideas. *Enfish*, 822 F.3d at 1335–36. As pointed out by Appellant, the claims are directed to providing pixel data to a display in order to drive display output. App. Br. 7. Also persuasive is Petitioner's argument that the claims are directed not to an abstract idea, but rather are directed to improvements in display controllers and drivers. App. Br. 8; *Enfish*, 822 F.3d at 1336 (finding the "plain focus of the claims is on an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity," and finding the claims therefore "are not directed to an abstract idea . . . [r]ather, they are directed to a specific improvement [in] the way computers operate"). The Specification explains "it may not be possible to implement a pixel clock rate that exactly corresponds to the target refresh rate of a graphics display," and addresses this problem by (1) selecting a pixel clock rate that corresponds to an effective refresh rate that is nearest to and lower than the target refresh rate, and (2) adding additional pixels to the image frame wherein the number of additional pixels is based at least on the effective and target display refresh rates. Spec. ¶ 8.

For the foregoing reasons, we determine the Examiner erred in rejecting claims 1–22 under 35 U.S.C. § 101 as being directed to ineligible subject matter.

2. *35 U.S.C. § 102(e)—Anticipation of claims 1, 2, 5, 6, and 9 by Wu*

For reasons discussed below, we are persuaded by Appellant's argument that the Examiner has not shown Wu discloses "providing, by a display controller circuit, image pixel values representative of respective pixels of an image frame at an implementable pixel clock frequency that corresponds to an effective display refresh rate that is nearest to and lower than a target display refresh rate," as recited in claim 1, and the similarly recited limitation in claim 6.

The Examiner relies on Wu's disclosure that display controller 330 provides pixel values to a display at a display refresh rate 324, without further explanation. Ans. 5 (citing Wu Figs. 3–4, ¶¶ 38, 42). We agree with Appellant that the Examiner's rejection fails to explain how Wu discloses an "effective display refresh rate" and a "target display refresh rate," as recited in the claims. App. Br. 23. The rejection calls out only one refresh rate, display refresh rate 324, and does not explain whether rate 234 is an effective or a target display refresh rate. Ans. 5. We agree with Appellant, moreover, that Wu does not disclose a refresh rate "that is nearest to and lower than a target display refresh rate." App. Br. 23. Wu discloses an embodiment in which "multiple video sources are processed and combined together into a single display, as would be typical with videos played in different windows on a desktop-style graphical user interface." Wu ¶ 34. The cited Wu disclosure explains playback video streams 300 and 350 provide video data to a compositor 320. *Id.* ¶ 38. Compositor 320 receives

information about video frame rates 312 and 362 for video streams 300 and 350, respectively, and combines this information to "select a refresh rate 324 that is appropriate for both playback streams when composited." *Id.* "The output display data 322 and selected refresh rate 324 are provided to the display controller 330, which sets the refresh rate of the display 332 and displays the video data." *Id.* Paragraphs 39 and 42 of Wu provide disclosure regarding possible ways compositor 320 can set a refresh rate, but we agree with Appellant that Wu is "silent" on implementing a refresh rate nearest to and lower than a target display refresh rate. *Id.* Wu discloses, for example, if the video frame rates for multiple playback streams are integer multiples of each other, the higher video frame rate can be used. Wu ¶ 39. Wu discloses also that "a number of different heuristics can be used, depending on the desired user experience," but the Examiner does not identify, nor do we discern, express disclosure of selecting a rate that is nearest to and lower than a target display refresh rate.

In the Answer, the Examiner identifies Wu's refresh rate 324 selected by compositor 320 as an "effective display refresh rate," and video frame rate 362[3] of playback stream 350 as the "target display refresh rate." Ans. 22. However, we agree with Appellant that the Examiner's Answer fails to rebut Appellant's argument that Wu is silent with regard to a refresh rate that is *nearest to and lower than* a target display refresh rate. Reply Br. 5.

For the foregoing reasons, we are persuaded by Appellant's arguments that Wu does not disclose "providing, by a display controller circuit, image

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[3] The Examiner erroneously refers to video frame rate 362 as refresh rate 326.

pixel values representative of respective pixels of an image frame at an implementable pixel clock frequency that corresponds to an effective display refresh rate that is nearest to and lower than a target display refresh rate," as recited in claim 1, and "a display controller configured to: provide image pixel values representative of pixels of each image frame of one or more image frames at a pixel clock rate corresponding to an implemented refresh rate nearest to and lower than a target refresh rate," as recited in claim 6.

Therefore, we determine the Examiner erred in rejecting, under § 102, independent claims 1 and 6, and claims 2, 5, and 9, which depend either from claim 1 or 6. Appellant raises additional arguments regarding the Examiner's rejection of claims 1, 2, 5, 6, and 9 under § 102. However, because we reverse the Examiner's rejection on the grounds discussed above, we need not, and do not, address Appellant's other arguments.

3. *35 U.S.C. § 103(a)—Obviousness of claims 3, 4, 7, 8, and 10–22 over Wu and Liao*

Claims 3, 4, 7, 8, and 10 depend either from claim 1 or 6. Because the Examiner has not shown Wu discloses the above-discussed limitations of claims 1 and 6, and the Examiner's application of Liao to claims 3, 4, 7, 8, and 10 does not cure these deficiencies, we determine the Examiner erred in rejecting claims 3, 4, 7, 8, and 10 under § 103.

With regard to independent claim 11, Appellant argues the Examiner has not shown the combination of Wu and Liao teaches or suggests the limitation "wherein the additional pixels are not part of the image frame to be displayed." App. Br. 35–36. The Examiner acknowledges Wu does not disclose this claim limitation, but finds Liao discloses this limitation, relying on Liao's disclosure of blank area 24 on the periphery of display area 22.

Ans. 11 (citing Liao ¶¶ 14–15). We agree with Appellant that, contrary to the Examiner's finding, Liao does not disclose this limitation. App. Br. 36. We find persuasive Appellant's argument that blank area 24 does not represent pixels that are not displayed, but instead represents an area that *displays* data, albeit blank data. Liao discloses blank area 24 results when an image frame has lower resolution, and therefore fewer pixels, than the display, resulting in displaying blank data. *Id.* (citing Liao, Abstract). Liao discloses blank area 24 "can be displayed as black data or any predetermined data." *Id.* (emphasis omitted) (quoting Liao ¶ 15). Accordingly, we are persuaded blank area 24 represents displayed data, and therefore neither teaches nor suggests additional pixels that are not part of an image frame to be displayed.

We also agree that Wu does not disclose the limitation at issue. App. Br. 35; Ans. 11. The Examiner identifies Wu's disclosure of combining video of a second playback stream with video of a first playback stream. Ans. 10. The Examiner finds the video pixel data from the second stream, when composited with the video pixel data from the first stream, constitutes "additional pixels." *Id.* We agree with Appellant that the "additional pixels" in Wu "will be displayed, and as such they cannot be characterized as not being part of the image(s) to be displayed." App. Br. 35 (emphasis omitted). Appellant relies on Wu's disclosure that compositor 320 combines "the video data from each playback stream . . . generating composited video." *Id.* (emphasis omitted) (quoting Wu ¶ 42). With regard to the composited video, Wu discloses "multiple video sources are processed and combined together into a single display, as would be typical with videos played in different windows on a desktop-style graphical user interface."

Wu ¶ 34. Therefore, Wu discloses that the composited video, including the "additional pixels," is displayed.

For the foregoing reasons, we determine the Examiner erred in rejecting claim 11, and claims 12–17 depending therefrom, under § 103.

With regard to independent claim 18, Appellant argues the Examiner has not shown Wu discloses the limitation "a processing element configured to determine, based at least on a first refresh rate and a second refresh rate higher than the first refresh rate, a number of respective blank pixels for each image frame of a plurality of image frames." App. Br. 38. We agree. The Examiner provides no explanation of how Wu discloses this limitation, stating only that "Fig. 3–4, paragraphs 0038 and 0042, where the display controller (330) provides pixel values a display refresh rate (324)." Ans. 13. We are persuaded by Appellant's argument that Wu is silent with regard to the number of pixels in an image frame, and provides no teachings regarding determining a number of pixels based on a first refresh rate and a second refresh rate higher than the first refresh rate, App. Br. 38, because the cited disclosure in Wu describes only combining video playback streams with no discussion of the number of pixels for an image frame, Wu Figs. 3–4, ¶¶ 38, 42. The Examiner does not rely on Liao to cure this deficiency.

For the foregoing reasons, we determine the Examiner erred in rejecting claim 18, and claims 19–22 depending therefrom, under § 103.

DECISION

The Examiner's decision rejecting claims 1–22 is reversed.

REVERSED