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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ELIOT LEONARD WEGBREIT and GREGORY D. HAGER

Appeal 2017-006595
Application 13/310,672[1]
Technology Center 2600

Before CARL W. WHITEHEAD JR., HUNG H. BUI, and AMBER L. HAGY, *Administrative Patent Judges*.

BUI, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants seek our review under 35 U.S.C. § 134(a) of the Examiner's final rejection of claims 1–27, which are all the claims pending in this appeal. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE. Pursuant to our authority under 37 C.F.R. § 41.50(b), we also enter a NEW GROUND OF REJECTION for claims 1, 17, and 22–27.[2]

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[1] According to Appellants, the real party of interest is Strider Labs, Inc.

[2] Our Decision refers to Appellants' Reply Brief filed March 17, 2017 ("Reply Br.") and Appeal Brief filed September 20, 2016 ("App. Br."); Examiner's Answer mailed January 19, 2017 ("Ans."); Final Office Action mailed October 6, 2015 ("Final Act."); and original Specification filed December 2, 2011 ("Spec.").

STATEMENT OF THE CASE

Appellants' Invention

Appellants' invention relates to "a method for constructing one or more 3D scene models comprising 3D objects and representing a scene, based upon a prior 3D model, and a model of scene changes." Spec. ¶ 7, Abstract.

Claims 1, 17, and 22–27 are independent. Claim 1 is illustrative of the claimed subject matter, as reproduced below:

> 1. A method for computing one or more 3D scene models comprising 3D object models and representing a scene, based upon a prior 3D scene model, the method comprising the steps of:
>
> (a) acquiring by a processor an image of the scene;
>
> (b) initializing by the processor the set of 3D scene models to the prior 3D scene model; and
>
> (c) modifying by the processor the set of 3D scene models to be consistent with the image, by:
>
> (i) comparing by the processor data of the image with 3D object models of the 3D scene model, resulting in differences between the value of the image data and the corresponding value of the 3D scene model, in associated data corresponding to 3D object models in the 3D scene model, and in unassociated data not corresponding to 3D object models in the 3D scene model;
>
> (ii) using the results of the comparison by the processor to detect 3D object models that are inconsistent with the image and removing by the processor the inconsistent 3D object models from the 3D scene models; and
>
> (iii) using the unassociated data by the processor to compute new 3D object models that are not in the prior

3D scene model and adding by the processor the new 3D object models to the 3D scene models.

App. Br. 53 (Claims Appx.).

Evidence Considered

Wolberg et al.	US 2008/0310757 A1	Dec. 18, 2008
Tuzel et al.	US 2006/0262959 A1	Nov. 23, 2006
Hager et al.	US 2005/0286767 A1	Dec. 29, 2005
Tinker et al.	US 2004/0130549 A1	July 8, 2004
Sawhney et al.	US 2001/0043738 A1	Nov. 22, 2001
Snyder et al.	US 6,215,503 B1	Apr. 10, 2001
Jenkins	US 6,057,847	May 2, 2000
Hai Tao, Harpreeet Sawhney, and Rakesh Kumar ("Tao")	*A Sampling Algorithm for Tracking Multiple Objects*, Sarnoff Corporation, 201 Washington Rd., Princeton NJ 08543	Jan. 1999

Examiner's Rejections

(1) Claims 1, 2, 8, 16, 22, and 24–27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolberg, Sawhney, and Tinker. Final Act. 2–27.

(2) Claims 3, 9, 10, and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolberg, Sawhney, Tinker, and Jenkins. Final Act. 28–34.

(3) Claims 4 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolberg, Sawhney, Tinker, and Tao. Final Act. 34–39.

(4) Claims 5 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolberg, Sawhney, Tinker, and Hager. Final Act. 39–44.

(5) Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolberg, Sawhney, Tinker, Hager, and Tuzel. Final Act. 44–45.

(6) Claims 11 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolberg, Sawhney, Tinker, Jenkins, and Snyder. Final Act. 45–55.

(7) Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolberg, Sawhney, Tinker, Tao, and Tuzel. Final Act. 53.

(8) Claims 17 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sawhney and Tinker. Final Act. 55–61.

(9) Claims 18 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sawhney, Tinker, and Jenkins. Final Act. 61–64.

(10) Claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sawhney, Tinker, and Hager. Final Act. 64–67.

(11) Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sawhney, Tinker, Hager, and Tuzel. Final Act. 67–69.

Issues on Appeal

Based on Appellants' arguments, the dispositive issues on appeal are: (1) whether the cited prior art discloses all limitations of Appellants' independent claims 1, 17, and 22–27; and (2) whether the Examiner has provided articulated reasoning with rational underpinning to combine the prior art references. App. Br. 16–50; Reply Br. 6–24.

ANALYSIS

Independent Claims 1, 22, and 24–27

In support of the obviousness rejection of claims 1, 22, and 24–27, the Examiner finds Wolberg teaches Appellants' method for computing one or more 3D scene models comprising 3D object models and representing a scene, based upon a prior 3D scene model, including:

> (a) acquiring by a processor an image of the scene;
> (b) initializing by the processor the set of 3D scene models to the prior 3D scene model; and
> (c) modifying by the processor the set of 3D scene models to be consistent with the image, by:
> (i) comparing by the processor data of the image with 3D object models of the 3D scene model, resulting in differences between the value of the image data and the corresponding value of the 3D scene model, in associated data corresponding to 3D object models in the 3D scene model, and in unassociated data not corresponding to 3D object models in the 3D scene model.

Final Act. 2–5 (citing Wolberg ¶¶ 17–18, 22, 53, 55–61, Figs. 2, 4).

The Examiner then relies on Sawhney for teaching substeps:

> (ii) using the results of the comparison by the processor to detect 3D object models that are inconsistent with the image and removing by the processor the inconsistent 3D object models from the 3D scene models; and
> (iii) using the unassociated data by the processor to compute new 3D object models that are not in the prior 3D scene model and adding by the processor the new 3D object models to the 3D scene models.

Final Act. 5–7 (citing Sawhney ¶¶ 69–70, Figs. 5, 9, 13). To the extent necessary, the Examiner also relies on Tinker for teaching the initialization

step (b) — a feature that is also disclosed by Wolberg — to support the conclusion of obviousness. Final Act. 7–8 (citing Tinker ¶ 8).

Appellants dispute the Examiner's factual findings regarding Wolberg and Sawhney, as well as the Examiner's rationale to make the combination. In particular, Appellants argue Wolberg does not teach (1) "computing one or more 3D scene models comprising 3D object models and representing a scene, based on a prior 3D scene model" and (2) "comparing . . . data of the image with 3D object models of the 3D scene model" as recited in claim 1 (similarly, claims 22 and 24–27), because "the concept of 3D object models as part of a 3D scene is simply not present in Wolberg" and Wolberg "does not use or describe 3D object models" and, as such, does not make any comparison. App. Br. 16–19; Reply Br. 6–9. According to Appellants, "[t]he issue is whether Wolberg even has the concept of a 3D object model as a separate part of the 3D scene model. The answer is no: Wolberg has no such teaching." Reply Br. 8 (emphasis omitted).

Appellants also argue Sawhney does not teach (1) "adding an object to, and deleting an object from, a 3D model," and (2) the use of "unassociated data to compute new 3D object models that are not in the prior 3D scene model and adding the new 3D object models to the 3D scene model" as recited in claim 1 (similarly, claims 22 and 24–27). App. Br. 19–33; Reply Br. 9–14. According to Appellants, the cited paragraphs 69–70 of Sawhney describe updating a 3D model based on image data and changing existing objects (i.e., objects may be added or deleted) in context of "detailed refinement of a three dimensional model . . . with definition of local surface shape and text," but not in context of a 3D model of a scene. App. Br. 21–28.

In response, the Examiner takes the position that: (1) Wolberg teaches "a 3D model of a scene" and "3D object models" (Ans. 4–6 (citing Wolberg's title)); and (2) "[t]he 'detailed refinement' of the 3D model of the scene will better approximate the true shape and surfaces that reflect changed, added, and deleted objects in the scene" and, as such, "according to Sawhney, object models are added to or deleted from the 3D scene model." Ans. 4–6, 8–10, 12 (citing Wolberg ¶ 70, Title)

We agree with the Examiner only in part. At the outset, we note Appellants' emphasis on "a 3D object model" as "a separate part of a 3D scene model" ("3D scene models comprising 3D object models" recited in the preamble of claim 1) is misplaced. Nowhere in Appellants' Specification is there any description of "a 3D object model" as being "a separate part of a 3D scene model" as Appellants argue. App. Br. 16–18. Instead, Appellants' Specification describes (1) "constructing a 3D scene model from an image of a scene" and (2) the 3D scene model is a collection of objects, wherein each of these objects corresponds to a physical object in the prior physical scene. Spec. ¶¶ 1, 11, 18–20. The term "3D object models" was added in Appellants' Amendment filed on April 9, 2015, to replace "3D objects" and paragraphs 19–20 of Appellants' Specification were cited to provide support for the changes. Contrary to Appellants' averment, the cited paragraphs 19–20 of Appellants' Specification only describe the 3D scene model as "a collection of objects" and not "3D object models." Based on Appellants' Specification, the term "3D scene models comprising 3D object models" recited in the claims can be broadly and reasonably interpreted to encompass both Wolberg's construction of a 3D model of a scene and Sawhney's construction of a 3D model of a scene.

Nevertheless, we agree with Appellants that neither Wolberg nor Sawhney teaches or suggests (1) the comparison between data of an image with 3D object models of the 3D scene model (i.e., 3D objects of a 3D scene model), and (2) the distinction between "associated data" and "unassociated data" produced as a result of comparison between the image and objects of the 3D scene model, and then (3) "using the results of the comparison . . . to detect 3D object models (i.e., 3D objects) that are inconsistent with the image and removing . . . inconsistent 3D object models from the 3D scene models" and (4) "using the associated data . . . to compute new 3D object models that are not in the prior 3D scene model and adding . . . new 3D object models to the 3D scene models" as recited in claims 1, 22, and 24–27. Contrary to the Examiner's findings, Wolberg describes a method for automatically aligning 2D images of a scene to a 3D model of the scene. *See* Wolberg, Abstract. The cited paragraphs (14 and 55–61) of Wolberg describe a multiview pose estimation and 3D structure refinement, and do not teach the disputed limitation:

> comparing by the processor data of the image with 3D object models of the 3D scene model, resulting in differences between the value of the image data and the corresponding value of the 3D scene model, in associated data corresponding to 3D object models in the 3D scene model, and in unassociated data not corresponding to 3D object models in the 3D scene model

as recited in claim 1, and similarly, claims 22 and 24–27.

During examination, claim terms are given their broadest reasonable interpretation consistent with the specification. *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). However, when the specification of a patent contains a "special definition given to a claim term

by the patentee," that definition controls interpretation of the term as it is used in the claim. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc). Both the terms (1) "associated data" and (2) "unassociated data" are defined by Appellants' Specification as: (1) "[i]mage data that is consistent with a corresponding object" and (2) "[i]mage data that is not consistent with corresponding objects of the scene model" respectively. Spec. ¶ 40.

Because (1) the Examiner has not accounted for these two different types of data and (2) Wolberg and Sawhney fail to teach or suggest each and every feature of Appellants' independent claims 1, 22, and 24–27, particularly the disputed limitations discussed *supra*, we do not sustain the Examiner's obviousness rejection of these claims, as well as dependent claims 2–16. For the same reasons discussed, we also do not sustain the Examiner's obviousness rejection of independent claims 17 and 23 and dependent claims 18–21.

NEW GROUNDS OF REJECTION

Pursuant to our authority under 37 C.F.R. § 41.50(b), however, we reject independent claims 1, 17, and 22–27 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter for the following reasons.

Patent eligibility is a question of law that is reviewable *de novo*. *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1333 (Fed. Cir. 2012). The Supreme Court has long held that "[l]aws of nature, natural phenomena, and abstract ideas [e.g., mental processes[3]] are not patentable." *Alice Corp. Pty.*

[3] *See Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) ("Phenomena of nature, though just discovered, *mental processes*, and abstract intellectual concepts

Ltd. v. CLS Bank Int'l, 134 S. Ct. 2347, 2354 (2014). The "abstract ideas" category embodies the longstanding rule that an idea, by itself, is not patentable. *Alice Corp.*, 134 S. Ct. at 2355 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

In *Alice*, the Supreme Court set forth an analytical "framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Id.* at 2355 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 79 (2012)). The first step in the analysis is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." *Id.* If not, the inquiry ends. *Thales Visionix Inc. v. U.S.*, 850 F.3d 1343, 1346 (Fed. Cir. 2017); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1339 (Fed. Cir. 2016). If the claims are directed to a patent-ineligible concept, the second step in the analysis is to consider the elements of the claims "individually and 'as an ordered combination'" to determine whether there are additional elements that "'transform the nature of the claim' into a patent-eligible application." *Id.* (quoting *Mayo*, 566 U.S. at 78–79). In other words, the second step is to "search for an 'inventive concept'—*i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.'" *Id.* (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73).

In applying the framework set out in *Alice*, and as the first step of the analysis, we find Appellants' independent claims 1, 17, and 22–27 are

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are not patentable, as they are the basic tools of scientific and technological work."). (Emphasis added).

directed to a patent-ineligible abstract concept of 3D modeling of an image involving making modification of a 3D scene model based on an image obtained from a scene. All the steps of Appellants' claims 1, 17, and 22–27, including, for example: (i) "comparing . . . data of the image with 3D object models of the 3D scene model, resulting in differences between the value of the image data and the corresponding value of the 3D scene model, in associated data corresponding to 3D object models in the 3D scene model, and in unassociated data not corresponding to 3D object models in the 3D scene model;" (ii) "using the results of the comparison . . . to detect 3D object models that are inconsistent with the image and removing . . . inconsistent 3D object models from the 3D scene models;" and (iii) "using the unassociated data . . . to compute new 3D object models that are not in the prior 3D scene model and adding . . . new 3D object models to the 3D scene models" are 3D abstractions of an image or an abstract concept that could be performed in the human mind, or by a human using a pen and paper. *CyberSource Corp.* 654 F.3d at 1372. "[M]ental processes–or processes of human thinking–standing alone are not patentable even if they have practical application." *In re Comiskey*, 554 F.3d 967, 979 (Fed. Cir. 2009); *see also Gottschalk*, 409 U.S. at 67 ("Phenomena of nature . . . , *mental processes*, and abstract intellectual concepts are not patentable, as they are basic tools of scientific and technological work." (emphasis added)). Mental processes remain unpatentable even when automated to reduce the burden on the user of what once could have been done with pen and paper. *CyberSource*, 654 F.3d at 1375 ("That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*."). Likewise,

attaching the claimed "mental process" to a computer or processor, as Appellants argue (App. Br. 18; Reply Br. 5), does not transform the claimed "mental process" into a patent-eligible subject matter under 35 U.S.C. § 101 unless the computer or processor is required. *See SiRF Tech., Inc. v. Int'l Trade Comm'n*, 601 F.3d 1319, 1331 (Fed. Cir. 2010). Appellant has not presented any argument or evidence that the claimed "mental process" must be performed by a computer or processor, as per *SiRF Tech.*

Alternatively, we also find Appellants' claims 1, 17, and 22–27, when considered in light of Appellants' Specification, are directed to the abstract idea of 3D modeling of an image involving data manipulation or organization through mathematical correlations, which is similar to the computing formula discussed in *Parker v. Flook*, 437 U.S. 584 (1978), and the Arrhenius formula in *Diamond v. Diehr*, 450 U.S. 175 (1981). Information as such is intangible, and data analysis and algorithms are abstract ideas. *See, e.g.*, *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437, 451 n.12 (2007); *Alice*, 134 S. Ct. at 2355; *Flook*, 437 U.S. at 589, 594–95 ("Reasoning that an algorithm, or mathematical formula, is like a law of nature, *Benson* applied the established rule that a law of nature cannot be the subject of a patent."); and *Gottschalk*, 409 U.S. at 71–72. Information collection and analysis, including when limited to particular content, is within the realm of abstract ideas. *See, e.g.*, *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1349 (Fed. Cir. 2015); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014); and *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1370 (Fed. Cir. 2011). That is, "[w]ithout additional limitations, a process that employs mathematical algorithms to manipulate existing information to generate

additional information is not patent eligible." *Digitech*, 758 F.3d at 1349–51 ("Data in its ethereal, non-physical form is simply information that does not fall under any of the categories of eligible subject matter under section 101").

As to the second step of the *Alice* inquiry, we find Appellants' claims 1, 17, and 22–27 do not add significantly more to the abstract idea of 3D scene modeling and data organization through mathematical relationships or transform the abstract idea into a patent-eligible application. *Alice*, 134 S. Ct. at 2357. Particularly, claims 1, 17, and 22–27 recite well-understood, routine, and conventional elements that enable the creation of a 3D scene model using a "generic computer to perform generic computer functions" that are well-understood, routine, and conventional. *Id.* at 2359.

As recognized by the Supreme Court, "the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *See Alice*, 134 S. Ct. at 2358*; see also id.* at 2359 (concluding claims "simply instruct[ing] the practitioner to implement the abstract idea of intermediated settlement on a generic computer" not patent eligible). Likewise, "the use of generic computer elements like a microprocessor or user interface do not alone transform an otherwise abstract idea into patent-eligible subject matter." *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1096 (Fed. Cir. 2016) (citing *DDR Holdings, LLC, v. Hotels.com, L.P.*, 773 F.3d 1245, 1256 (Fed. Cir. 2014)); *see also Accenture Global Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1344–45 (Fed. Cir. 2013) (claims reciting "generalized software components arranged to implement an abstract concept [of generating insurance-policy-related tasks based on rules to be completed upon the

occurrence of an event] on a computer" are not patent eligible); *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1333–34 (Fed. Cir. 2012) ("Simply adding a 'computer aided' limitation to a claim covering an abstract concept, without more, is insufficient to render [a] claim patent eligible.").

Because Appellants' claims 1, 17, and 22–27 are directed to a patent-ineligible abstract concept and do not recite something "significantly more" under the second prong of the *Alice* analysis, we issue a new ground of rejection of independent claims 1, 17, and 22–27 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. In rejecting claims 1, 17, and 22–27, we note that we are primarily a reviewing body, rather than a place of initial examination. We, therefore, leave it to the Examiner to determine whether those claims that depend from claims 1, 17, and 22–27, respectively, should be rejected on similar grounds to those set forth herein or in combination with additional prior art. *The fact that we did not enter new grounds of rejection for the dependent claims should not be construed to mean that we consider the dependent claims to be directed to patentable subject matter.*

DECISION

On the record before us, we conclude Appellants have demonstrated the Examiner erred in rejecting claims 1–27 under 35 U.S.C. § 103(a). As such, we REVERSE the Examiner's final rejection of claims 1–27 under 35 U.S.C. § 103(a).

However, pursuant to our authority under 37 C.F.R. § 41.50(b), we enter a NEW GROUND of rejection for independent claims 1, 17, and 22–27 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

Rule 37 C.F.R. § 41.50(b) states that "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review." Further, § 41.50(b) also provides that Appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new [e]vidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner . . . .
>
> (2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record . . . .

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).

REVERSED; 37 C.F.R. § 41.50(b)