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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TIM NIELSEN and PETER BÖRNERT

Appeal 2018-003351
Application 14/425,669
Technology Center 2800

Before TERRY J. OWENS, JEFFREY R. SNAY, and BRIAN D. RANGE,
Administrative Patent Judges.

SNAY, *Administrative Patent Judge.*

DECISION ON APPEAL¹

Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1–6, 8, 9, 12–15, 20–24, 26, and 27. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

¹ We refer to the Specification (“Spec.”) submitted March 4, 2015; Final Office Action (“Final Act.”) dated May 22, 2017; Appellant’s Appeal Brief (“App. Br.”) filed September 29, 2017; Examiner’s Answer (“Ans.”) dated December 18, 2017; and Appellant’s Reply Brief (“Reply Br.”) dated February 5, 2018.

² Appellant is Applicant, Koninklijke Philips, N.V., which also is identified as the real party in interest. App. Br. 1.

BACKGROUND

The subject matter on appeal relates to control of magnetic resonance imaging data acquisition to address image defects caused by patient movement. Spec. 1. Generally, imaging data is reconstructed as a two or three dimensional visualization of anatomic information. *Id.* at 5. Patient motion during imaging can compromise the diagnostic quality of the resulting images. *Id.* at 1. Appellant discloses a solution to patient motion in which navigator data—magnetic resonance data representative of a subject’s location or state of motion—is acquired, analyzed, and used iteratively to control the magnetic resonance system to modify the image data acquisition, such as instructing the system to alter how the image data is acquired or to reacquire a portion of the image data. *Id.* at 5, 12, 14, 16. Claim 1 is illustrative of the subject matter on appeal and is reproduced from the Claims Appendix of Appellant’s Appeal Brief below:

1. A magnetic resonance imaging system for acquiring magnetic resonance data from an imaging zone, wherein the magnetic resonance imaging system comprises:
 - one or more computer processors configured for controlling the magnetic resonance imaging system to image a patient in an imaging zone of the magnetic resonance imaging system, the patient undergoing patient motion; and
 - a memory configured for storing machine executable instructions for execution by the processor, wherein execution of the machine executable instructions causes the one or more processors to:
 - control the magnetic resonance imaging system to repeatedly acquire the magnetic resonance data from the imaging zone, the magnetic resonance data including magnetic resonance anatomic image data and magnetic resonance navigator data;
 - create a set of navigator vectors from the magnetic resonance navigator data;

construct a dissimilarity matrix by calculating a metric indicative of a dissimilarity between each navigator vector of the set of navigator vectors;
determine a matrix classification of the dissimilarity matrix using a classification algorithm, the matrix classification being indicative of patient motion;
control the magnetic resonance imaging system to modify acquisition of the magnetic resonance data based on the determined matrix classification; and
reconstruct the magnetic resonance anatomic image data into at least one anatomic image; and
a display device configured to display the at least one anatomic image.

Independent claim 20 similarly is directed to a magnetic resonance system, including at least one computer processor configured to modify control of the system based on acquired navigator data. Independent claims 15 and 21 recite corresponding machine readable instructions and imaging method, respectively. Each of the remaining claims on appeal depends from claim 1, 15, 20, or 21.

REJECTION³

Claims 1–6, 8, 9, 12–15, 20–24, 26, and 27 stand rejected under 35 U.S.C. § 101 as being directed to ineligible subject matter.

OPINION

As defined by the Patent Act, patent-eligible subject matter includes “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” 35 U.S.C. § 101. The

³ The Examiner’s rejection of claim 22 under 35 U.S.C. § 112 is withdrawn.
Ans. 2.

courts have created certain exceptions to the literal scope of § 101. In particular, laws of nature, natural phenomena, and abstract ideas are not patent-eligible. *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014).

Since *Alice*, patent-eligibility has been determined using a two-step process. In step one, we determine whether the claims at issue are directed to a judicial exception, such as an abstract idea. *Alice*, 134 S. Ct. at 2355. If the claims are not directed to one of the judicial exceptions, the inquiry ends. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1339 (Fed. Cir. 2016). If the claims are held to be directed to one of the judicial exceptions, we proceed to step two. In this step, we determine whether the claims contain “an ‘inventive concept’ . . . that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Alice*, 134 S. Ct. at 2355 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 72–73 (2012)) (alteration in original, emphasis added).

The Examiner determines that Appellant’s claims are directed to the abstract idea of collecting, manipulating, analyzing, and displaying data. Final Act. ¶ 8. The Examiner finds that the claims, therefore, are directed to a judicial exception from patent eligible subject matter. The Examiner further finds that the additional elements recited in the claims do not amount to significantly more than the judicial exception because they are directed to conventional features of magnetic resonance imaging. *Id.*

Appellant relies on the same arguments with regard to each of the independent claims. Particularly, Appellant argues, *inter alia*, that the claims on appeal are directed to an improved technique for controlling a magnetic resonance scanner based on the results of a computer process.

App. Br. 10, 13. Appellant cites *Diamond v. Diehr*, 450 U.S. 175 (1981) for the proposition that “controlling the execution of a physical process or machine by running a computer program is not precluded from patent eligibility under 35 U.S.C. § 101.” *Id.* at 10. Thus, Appellant contends that the Examiner erred in determining that the claims are directed to an abstract idea. *Id.* at 13, 15–16, 18–19; Reply Br. 4–6. We agree.

When considering whether the claims are directed to a patent-ineligible concept, “[t]he ‘directed to’ inquiry . . . cannot simply ask whether the claims *involve* a patent-ineligible concept, because essentially every routinely patent-eligible claim involving physical products and actions *involves* a law of nature and/or natural phenomenon.” *See Enfish*, 822 F.3d at 1335–36 (citing *Mayo*, 566 U.S. at 70–71). Rather, “the ‘directed to’ inquiry applies a stage-one filter to claims” considered in their entirety, in light of the Specification, to ascertain whether the claims’ character as a whole is directed to excluded subject matter. *Id.* (citing *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)).

Having reviewed the evidence, we disagree with the Examiner’s determination that the claims are directed to an abstract idea of collecting, manipulating, analyzing, and displaying data. That characterization of Appellant’s claims disregards the claim language regarding iterative control of the magnetic resonance imaging system. *See e.g.* Claim 1 (“control the magnetic resonance imaging system to modify acquisition of the magnetic resonance data based on the determined matrix classification”); Claim 15 (“control the magnetic resonance imaging system to modify acquisition of the magnetic resonance data using the matrix classification”); Claim 20 (“modify the controlling of the magnetic resonance imaging system based on

the determined matrix classification”); Claim 21 (“modifying the controlling of the magnetic resonance imaging system based on the determined matrix classification with the one or more processors”). Rather, we conclude that the character of the claims as a whole is directed to an improved magnetic resonance imaging technique involving iterative control of imaging data acquisition, particularly in response to patient movement. The Specification supports our conclusion. *See e.g.* Spec.; Abstract (“The invention provides for a magnetic resonance imaging system for acquiring magnetic resonance data. A processor . . . executes instructions . . . to repeatedly: control the magnetic resonance imaging system to acquire a portion of the magnetic resonance data . . .; construct a dissimilarity matrix by calculating a metric between each of the set of navigator vectors . . .; and control the magnetic resonance imaging system to modify acquisition of the magnetic resonance data using the matrix classification.”) (internal reference numerals omitted).

Rather than merely collecting and displaying data, the claims on appeal are directed to use of that data to direct subsequent operations—namely, to control the imaging system to reacquire magnetic resonance data in an unconventional way to rectify previously acquired data that was compromised by patient movement. In that way, Appellant’s claims are like those before the Court in *Vanda Pharmaceuticals Inc. v. West-Ward Pharmaceuticals International Limited*, 887 F.3d 1117 (Fed. Cir. 2018). In *Vanda*, the Court distinguished claims involving using acquired patient information to modify a drug administration regimen from the claims at issue in *Mayo*, which involved acquiring patient information but did not require any particular use of the acquired information. *Vanda* 887 F.3d at 1134–5. The Court found the claims in *Vanda* were not directed to an

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abstract idea, under *Alice* step one, because they involved using the acquired data to direct a treatment program. Similarly, in this case, the claims involve use of acquired data to direct operation of a magnetic resonance imaging system. As such, these claims are not directed to an abstract idea and, accordingly, the claims survive *Alice* step one.

Because we find the claims are not directed to an abstract idea, we need not proceed to step two. The Examiner's rejection under 35 U.S.C. § 101 is not sustained.

DECISION

The Examiner's decision is reversed.

REVERSED