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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ERIC COHEN-SOLAL,
GABRIEL RYAN MANKOVICH, YUECHEN QIAN, and
THUSITHA DANANJAYA DE SILVA MABOTUWANA

Appeal 2018-006841
Application 14/906,608[1]
Technology Center 2600

Before KEVIN F. TURNER, JOHNNY A. KUMAR, and
JASON M. REPKO *Administrative Patent Judges*.

TURNER, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a Final Office Action dated November 9, 2017 ("Final Act."), rejecting claims 1–4, 6, 8, 11, 13, 15, 16, and 20. Claims 5, 7, 9, 10, 12, 14, and 17–19 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

[1] According to Appellants, the real party in interest is Koninklijke Philips N.V., the assignee of this application. Appeal Brief 2 ("App. Br.").

STATEMENT OF THE CASE

According to the Specification, radiologists review medical scans to monitor the course of treatment or recovery from surgery. Spec. 1:1–14. To do this, the radiologist will compare a current scan with prior corresponding scans and look for changes in the structure of interest. *Id*. at 1:14–19. However, this can be very time consuming because the radiologist must locate the prior corresponding scans, which can be within a data set containing hundreds of scans, and then compare each of those scans to the current image. *Id*. Accordingly, the claimed invention is directed to an improvement to matching of images between data sets. *See generally* Spec. In one embodiment, a method, a system, and a computer readable storage medium include: (1) detect a focus of attention of an observer of an anatomical image; (2) determine a location of the anatomical image based on the detected focus of attention; (3) identify the corresponding anatomical image from a prior data set; and (4) display the images for the radiologist. *Id*. at 2:3–8.

Claims 1, 15, and 20 are independent and are reproduced below:

1. A method, comprising:

detecting a focus of attention of an observer of a first anatomical image of a set of images;

determining, in response to the detected focus of attention, that a location of the first anatomical image includes a tissue with a finding of interest;

identifying a second anatomical image from an earlier acquired imaging data set comprising earlier acquired images, with a same portion of the tissue as the first anatomical image by determining that a distance between a first annotation of the first anatomical image and a second annotation of the second anatomical image is below a threshold; and

visually displaying graphical indicia, concurrently with the first anatomical image, that identifies the second anatomical image.

15. A system, comprising:

a sensor that senses a focus of attention of an observer of a first anatomical image of a set of images;

a processor configured to:

map the sensed focus of attention to the first anatomical image based on a display geometry of the monitor,

determine a metric based on the map,

compare the metric with a predetermined metric and determine a location of the first anatomical image includes tissue with a finding of interest in response to the metric satisfying the predetermined metric,

identify a second anatomical image from an earlier acquired imaging data set with a same tissue as the first anatomical image by computing a normalized weighted score between the first anatomical image and a plurality of images of the previously generated imaging data set; and

a display monitor that displays graphical indicia that identifies the second anatomical image.

20. A computer readable storage medium encoded with computer readable instruction, which, when executed by a processor, causes the processor to:

detect a focus of attention of an observer of a first anatomical image of a set of images;

determine, in response to the detected focus of attention, that a location of the first anatomical image includes a tissue with a finding of interest;

determine a pattern of scrolling back and forth between a plurality of anatomical images of the set of images; and

identifying an anatomical image from an earlier acquired imaging data set with a same tissue as the first anatomical image based on the pattern; and

> visually displaying graphical indicia, concurrently with the first anatomical image, that identifies the second anatomical image.

App. Br. 6–9 (Claims Appendix).

The Rejection on Appeal

Claims 1–4, 6, 8, 11, 13, 15, 16, and 20 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to a judicial exception without significantly more. Final Act. 3–7, Ans. 2–7.

ANALYSIS

We have reviewed the Examiner's rejection in light of the Appellants' arguments. For the reasons set forth below, we reverse the Examiner's 101 rejection.

Principles of Law

Patent eligibility is assessed under 35 U.S.C. § 101, which states that 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 U.S. Supreme Court has held that this statutory provision contains an important implicit exception: laws of nature, natural phenomena, and abstract ideas are not patentable. *E.g.*, *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). But claiming the practical application of these concepts may be deserving of patent protection. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293–94 (2012). In *Alice*, the Supreme Court reaffirmed the framework set forth previously in *Mayo* "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 the analysis is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." *Id.* 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*, 132 S. Ct. at 1298, 1297). 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*, 132 S. Ct. at 1294).

The USPTO recently published revised guidance on the application of § 101. USPTO's January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* ("Guidance"). Under that guidance, we first look to whether the claim recites:

> (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and
>
> (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP §§ 2106.05(a)–(c), (e)–(h)).

Only if a claim (1) recites a judicial exception, and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

> (3) adds a specific limitation beyond the judicial exception that

> is not "well-understood, routine conventional" in the field (*see* MPEP § 2106.05(d)); or
>
> (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See Guidance.

Discussion

Appellants argue that the Examiner erred in determining the claims are directed to an abstract idea, and therefore constitute patent-ineligible subject matter. App. Br. 3–5, Reply Br. 2–4.[2] Specifically, Appellants argue that the claims are not directed to a mental process because the claims do not "automate a method that was previously performed by a radiologist," as the Examiner concludes. Reply Br. 2. Rather, Appellants argue, the "claims present a new set of rules that were not previously performed by humans in order to automate a computer related task that previously relied on subjective human decisions." *Id*. at 3.

For the reasons set forth below, we determine that (1) claim 20 is directed to non-transitory storage medium and is therefore patent-eligible; (2) claims 1–3, 6, 8, 11, and 13 are patent-eligible because the mental processes abstract idea is integrated into a practical application; and (3) claims 4, 15, and 16 are patent-eligible because the claims are not directed to an abstract idea.

[2] Appellants argue claims 1–4, 6, 8, 11, 13, 15, 16, and 20 as a group. We choose to address the claims in separate groups. As such, we determine that claims 2–3, 6, 8, 11, and 13 will stand or fall with claim 1, and claims 4 and 16 will stand or fall with claim 15. We choose these groups based on the subject matter recited in the claims. *See* C.F.R. § 41.37(c)(1)(iv).

Claim 20

The Examiner determined that claim 20 is not patent-eligible subject matter because, under its broadest reasonable interpretation, the claim includes transitory signals. Final Act. 6–7, Ans. 5–6. We do not agree. Specifically, we agree with Appellants that the claims are to be given their broadest reasonable interpretation consistent with the specification, and the computer readable storage medium in claim 20 is limited to a non-transitory storage medium. Reply Br. 3. According to the Specification, "the computer system 100 includes . . . [a] computer readable storage medium (memory) 106 (i.e., physical memory and *other non-transitory storage medium*)." Spec. 3:19–21 (Emphasis added). Thus, the Specification clearly limits computer readable storage medium to a *non-transitory storage medium*, which is not, *per se*, patent-ineligible subject matter.

We believe that the Examiner may have applied line 28 of page 3 of the Specification when interpreting the computer readable storage medium of claim 20. However, the *other transitory storage medium* of line 28 clearly refers to the functioning of microprocessors, and not to the type of computer readable storage medium. In relevant part, lines 26–28 state that "[t]he one or more microprocessors can . . . execute instruction carried by . . . other transitory storage medium." *Id*. at 3:26–28. Thus, this line describes the functioning of microprocessors—it can execute instruction carried by other transitory storage media—and not to the computer readable storage medium claimed in claim 20.

For this reason, we are persuaded that the Examiner erred in determining that claim 20 is directed to patent-ineligible subject matter. Accordingly, we reverse the rejection of claim 20 under 35 U.S.C. § 101.

Claims 1–3, 6, 8, 11, and 13

We begin with Step 2A Prong 1 of the Revised Guidance, which requires that we determine whether the claim recites any judicial exceptions. Guidance 53. Claim 1 recites the following method to detect a focus of attention of an observer of a first anatomical image of a set of images:

> [1] detecting a focus of attention of an observer . . . ; [2] determining, in response to the detected focus of attention, that a location of the first anatomical image includes a tissue . . . ; [3] *identifying a second image . . . by determining that a distance between a first annotation . . . and a second annotation . . . is below a threshold*; and [4] visually displaying graphical indicia, concurrently with the first anatomical image, that identifies the second anatomical image.

App. Br. 6 (Claims Appendix) (emphasis added).

We agree with the Examiner's determination that claim 1 recites the abstract idea of "detecting a focus of attention." Final Act. 3–5, Ans. 2–4. Specifically, under the Guidance, we agree with the Examiner that claim 1 recites the *mental processes* judicial exception because under its broadest reasonable interpretation claim 1 could be performed in a person's mind. *Id*. For example, the scope of claim 1 is not limited to any particular method of detecting a focus of attention; determining a location; identifying a second anatomical image by determining a distance between a first annotation and a second annotation; and visually displaying the images. Thus, as the Examiner determined, the scope of claim 1 would allow all of the limitations to be performed in a person's mind.

Accordingly, we determine that claims 1–3, 6, 8, 11, and 13 recites the mental processes judicial exception.

Because we determine that claim 1 recites a judicial exception, we turn to Step 2A Prong 2 to determine if the judicial exception is integrated into a practical application. Guidance 54. A practical application is one where the claim "will apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." *Id.* at 54. For example, one instance when a judicial exception is integrated into a practical application is when those additional elements result in an improvement to a technical field. *Id*. at 55.

The Examiner determined that claim 1 is not directed to a technological improvement because the "ability to automate a mental process does not illustrate a technological improvement that solves a technological problem." Ans. 6. We do not agree. Specifically, we agree with Appellants' argument that the claims are directed to an improvement in the technical field of image matching. App. Br. 3–5, Reply Br. 2–3.

The Federal Circuit has held that improvements to technology beyond improvements in computer functionality may indicate patent-eligibility. *See generally McRO, Inc v. Bandai Namco Games America Inc*., 837 F.3d 1299 (Fed. Cir. 2016). According to the MPEP, to show an improvement in the technical field, the specification must contain a technical explanation describing how to implement the claimed invention such that a person of ordinary skill in the art would recognize the claimed invention as providing an improvement, and the claims must also reflect this improvement in technology. MPEP § 2106.05(a).

We determine that the Specification contains disclosure describing the technical problem and a technical description describing the improvement to

the claimed invention. *See* Spec. 1:1–2:2 (describing the technical problem of matching images between data sets), *id*. at 5:21–7:17 (describing a technical solution that *improves* matching between data sets). Further, we determine that the claims *do* reflect the improvement in matching between data sets. *See* claim 1 (describing the steps to identify a second anatomical image from an earlier acquired image), *see* claim 13 (describing how the earlier acquired image is evaluated).

In addition, it is also evident that the Examiner views the processes occurring in the claims as more than automation of a single mental process. In the Final Office Action, the Examiner acknowledges that "a person can look at another person observing image(s) [, and] determine where the observer's eyes are directed to." Final Act. 4. Whereas, in the Answer, the Examiner asserts that "the disclosure focuses on how to automate the method that was previously performed by a radiologist (or mental steps that are performable by a radiologist)." Ans. 6. Claim 1 makes it clear that it would be the mental processes of the additional person "detecting a focus of attention of an observer," i.e., person observing the radiologist, that would need to be automated, in terms of the mental processes judicial exception, and not merely an automation of the mental processes of the radiologist.

Accordingly, we determine that claims 1–3, 6, 8, 11, and 13 integrate the mental processes judicial exception into a practical application, and thus, are not directed to the judicial exception.

For this reason, we are persuaded that the Examiner erred in determining that claims 1–3, 6, 8, 11, and 13 are directed to patent-ineligible subject matter. Accordingly, we reverse the rejection of claims 1–3, 6, 8, 11, and 13 under 35 U.S.C. § 101.

Claims 4, 15, and 16

With respect to claims 4, 15, and 16, we return to Step 2A Prong 1 of the Revised Guidance, which requires that we determine whether the claim recites any judicial exceptions. Guidance 53. Claim 15 recites the following system:

> [1] *a sensor that senses a focus of attention of an observer* . . . ; [2] a processor to: [a] map the sensed focus of attention . . . , [b] determine a metric based on the map, [c] compare the metric with a predetermined metric and determine a location of the first anatomical image . . . , [d] identify a second anatomical image from an earlier acquired imaging data set; and [3] a display monitor.

App. Br. 8 (Claims Appendix) (emphasis added). Claim 4 is similarly directed to an eye tracker. *Id*. at 6–7. According to the Specification, an eye tracker includes a sensor. Spec. 5:24–25. Because the eye tracker includes a sensor, claim 4 is structurally similar to claim 15.

The Examiner determined that claim 15 is a system claim that is directed to the abstract idea of "detecting a focus of attention." Final Act. 3–5, Ans. 2–4. Specifically, the Examiner determined that the limitations of claim 15 can be performed by a "human mind." Final Act. 4–5, Ans. 3–4. We do not agree. All the reasons discussed above in connection with claim 1 apply to claim 15 because claim 15 recites method similar to the one in claim 1 as functions performed by a processor. Also, claim 15 includes a sensor (App. Br. 8 (Claims Appendix)), which can be a video camera. Spec. 5:24–27. Specifically, this sensor, in order to detect a focus of attention of an observer, is able to detect visible light, infrared light, and near-infrared non-collimated light, which is required for calculating the gaze direction. *Id*. at 5:28–33. For the additional reason that the sensor can detect light at

wavelengths that are invisible to the human eye, the claim limitations cannot be performed by a person's mind alone. Thus, claim 15 does not recite a mental process.

Accordingly, we determine that claims 4, 15, and 16 are not directed to the mental processes judicial exception.

For this reason, we are persuaded that the Examiner erred in determining that claims 4, 15, and 16 are directed to patent-ineligible subject matter. Accordingly, we reverse the rejection of claims 4, 15, and 16 under 35 U.S.C. § 101.

DECISION

The Examiner's rejection of claims 1–4, 6, 8, 11, 13, 15, 16, and 20 under 35 U.S.C. § 101 is reversed.

REVERSED