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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MICHAEL CHUN-CHIEH LEE, YUECHEN QIAN, and JAMES CHI-KUEI SHAW

Appeal 2018-003851
Application 14/220,418
Technology Center 3600

Before ST. JOHN COURTENAY III, JOHN P. PINKERTON, and JASON J. CHUNG, *Administrative Patent Judges*.

CHUNG, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals the Final Rejection of claims 1–28. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

INVENTION

The invention relates to identifying relevant imaging examination recommendations for a patient from prior medical reports of the patient to facilitate determining a follow-up imaging examination(s) for the patient.

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[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. According to Appellant, Koninklijke Philips N.V., Eindhoven, NL is the real party in interest. Appeal Br. 2.

Spec. 1:1–3. Claim 1 is illustrative of the invention and is reproduced below:

> 1. A method for identifying relevant follow-up recommendations from medical reports, comprising:
>
> obtaining, in electronic format, an imaging examination order for a follow-up imaging examination of a patient, wherein the imaging examination order includes an imaging modality for the follow-up imaging examination of the patient, wherein the imaging modality includes at least one from a group comprising of computed tomography (CT), magnetic resonance (MR), positron emission tomography (PET), single photon emission computed tomography (SPECT), ultrasound (US) and X-ray;
>
> identifying, with a processor, follow-up recommendations in electronically formatted prior medical reports;
>
> filtering the identified follow-up recommendations in electronically formatted prior medical reports according to the imaging modality of the imaging examination order; and
>
> visually presenting, via a display monitor, the filtered follow-up recommendations.

REJECTIONS AT ISSUE[2]

Claims 1–28 stand rejected under 35 U.S.C. § 101 as being directed to patent ineligible subject matter. Final Act. 3–6.

Claims 1–3, 18, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Yetisgen-Yildiz et al. "A text

[2] We have decided the Appeal before us; however, in the event of further prosecution, the Examiner should evaluate claim 28 in light of *In re Nuijten*, 500 F.3d 1346 (Fed. Cir. 2007); *Subject Matter Eligibility of Computer Readable Media*, 1351 Off. Gaz. Pat. Office 212 (Feb. 23, 2010), and the recent Decision in *Ex parte Mewherter*, 107 USPQ2d 1857 (PTAB 2013) (precedential). We note that Appellant's Specification specifically states "[o]ptionally, the processor 104 can additionally or alternatively execute one or more computer readable instructions *carried by a carrier wave, a signal or other transitory medium*" (emphasis added). Spec. 3.

processing pipeline to extract recommendations from radiology reports," 46 J. of Biomedical Informatics (2013) ("Yetisgen-Yildiz"), and Jones (US 2012/0130745 A1; published May 24, 2012). Final Act. 7–11.

Claims 4–16 and 19–27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Yetisgen-Yildiz, Jones, and Downs (US 2009/0216696 A1; published Aug. 27, 2009). Final Act. 11–22.

Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Yetisgen-Yildiz, Jones, Downs, and Mullin (US 2012/0316890 A1; Dec. 13, 2012). Final Act. 22–23.

ANALYSIS

I. Claims 1–28 Rejected Under 35 U.S.C. § 101

A. Legal Principles

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *E.g.*, *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court's two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is "directed to." *See Alice*, 573 U.S. at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, i.e., the use of a third party to mitigate settlement risk."); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4

in petitioners' application explain the basic concept of hedging, or protecting against risk.").

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 69 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as "molding rubber products" (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); "tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores" (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that "[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula." *Diehr*, 450 U.S. at 187; *see also id.* at 192 ("We view respondents' claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula."). Having said that, the Supreme Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment." *Id.* (citing *Benson* and *Flook*); *see, e.g.*, *id.* at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent

protection.").

If the claim is "directed to" an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where "we must examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice*, 573 U.S. at 221 (quotation marks omitted). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* (quoting *Mayo*, 566 U.S. at 77). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention." *Id.*

The PTO recently published revised guidance on the application of § 101. USPTO's January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* ("Memorandum"). 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 are 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 Memorandum.

B. The Examiner's Conclusions and Appellants' Arguments

The Examiner concludes the present claims recite retrieving prior medical reports for a patient based on a patient identifier in a medical imaging order and identifying/displaying follow-up recommendations, which match an imaging modality filter in the prior medical reports. The Examiner also determines the present claims do not amount to significantly more than an abstract idea itself because the Examiner determines the abstract idea is implemented on generic components that are well-understood, routine, and conventional previously known to the industry. Final Act. 5–6; Ans. 3–5 (relying on expertise in the art).

Appellant argues, similar to *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1308–14 (Fed. Cir. 2016), the present claims recite an improvement to a technical field of automated document processing. Appeal Br. 8–10; Reply Br. 13. Appellant argues, similar to *BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016), the present claims recite a combination of non-conventional and non-generic arrangement of known, conventional elements, which results in an inventive concept. Appeal Br. 10; Reply Br. 3–4. Appellant argues the Examiner's determination that the abstract idea is implemented on generic components that are well-understood, routine, and conventional previously known to the industry is conclusory. Appeal Br. 5–

7.[3] We disagree with Appellant.

C. Discussion

1. Step 2A, Prong 1

Patent eligibility under 35 U.S.C. § 101 is a question of law that is reviewable *de novo*. *See Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1333 (Fed. Cir. 2012). We are aware of no controlling authority that requires the Examiner to provide factual evidence under step one of the *Alice* framework to support a determination that a claim is directed to an abstract idea.

We reproduce claim 1 below with emphases.

> 1. A method for identifying relevant follow-up recommendations from medical reports, comprising:
>
> *obtaining, in electronic format, an imaging examination order for a follow-up imaging examination of a patient, wherein the imaging examination order includes an imaging modality for the follow-up imaging examination of the patient, wherein the imaging modality includes at least one from a group comprising of computed tomography (CT), magnetic resonance (MR), positron emission tomography (PET), single photon emission computed tomography (SPECT), ultrasound (US) and X-ray;*
>
> *identifying*, with a processor, *follow-up recommendations in electronically formatted prior medical reports;*
>
> *filtering the identified follow-up recommendations in electronically formatted prior medical reports according to the imaging modality of the imaging examination order; and*
>
> *visually presenting*, via a display monitor, *the filtered follow-up recommendations*.

[3] Appellant's arguments pertaining to *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016) and *Content Extraction & Transmission v. Wells Fargo Bank, N.A.*, 776 F.3d 1343 (Fed. Cir. 2014) (Appeal Br. 7–8) are moot because we do not rely on the Examiner's conclusions pertaining to those cases to reach our Decision.

The emphasized portions of claim 1[4] recite managing personal behavior (including following rules or instructions). According to the Memorandum, managing personal behavior (including following rules or instructions) falls into the category of certain methods of organizing human activity. *See* Memorandum. Moreover, those certain methods of organizing human activity are a type of an abstract idea. *See id.* Additionally, we conclude the limitation "identifying . . . follow-up recommendations in electronically formatted prior medical reports" can be performed in the human mind, which falls into the category of mental processes (i.e., an abstract idea). *See id.*

Because the present claims recite an abstract idea, we proceed to prong 2.

2. Step 2A, Prong 2

The present claims do not integrate the abstract idea into a practical application because they do not impose any meaningful limits on practicing the abstract idea. In particular, we disagree with Appellant's argument that the present claims recite an improvement to a technical field of automated document processing. Appeal Br. 8–10; Reply Br. 13.

Unlike the claims of *McRO*, the present claims do not recite rules for lip sync and facial expression animation or an improvement in computer technology.

Instead, the present claims recite an abstract idea as discussed *supra*,

[4] Claim 1, reproduced above with emphases, recites similar features as independent claims 18 and 28. Appellant does not argue claims 2–28 separately. Appeal Br. 5–10. We, therefore, group claims 1–28 together and refer to claims 1–28 as the "present claims."

in § I.C.1. or at best, improving an abstract idea—not a technological improvement. The Specification indicates the additional elements (i.e., "processor," "display monitor," and "data repository"[5]) recited in the present claims are merely tools used to implement the abstract idea. Spec. 2–4.

Additionally, "a claim for a *new* abstract idea is still an abstract idea." *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1151 (Fed. Cir. 2016) (emphasis added). "[U]nder the *Mayo*/*Alice* framework, a claim directed to a newly discovered law of nature (or natural phenomenon or abstract idea) cannot rely on the novelty of that discovery for the inventive concept necessary for patent eligibility . . . ." *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) (citations omitted).

Appellant does not make any other arguments pertaining to step 2A, prong 2. Because the present claims recite an abstract idea that is not integrated into a practical application, we proceed to Step 2B.

3. Step 2B

We disagree with Appellant's argument that the Examiner's determination that the abstract idea is implemented on generic components that are well-understood, routine, and conventional previously known to the industry is conclusory. Appeal Br. 5–7. The Examiner finds the abstract idea is implemented on generic components that are well-understood, routine, and conventional, as supported by "expertise in the art." Final Act. 5–6; Ans. 3–5 (relying on expertise in the art). We find the Specification supports the Examiner's determination in this regard because it explains that the "processor," "display monitor," and "data repository" are generic

[5] Claims 18 and 28 recite "data repository," whereas claim 1 does not.

components. Spec. 2–4. Appellant's Specification supports a finding that these elements were well-understood, routine, and conventional components because it describes them at a high level of generality and in a manner that indicates they are sufficiently well-known. *Id.*

We disagree with Appellant's argument that, similar to *BASCOM*, the present claims recite a combination of non-conventional and non-generic arrangement of known, conventional elements, which result in an inventive concept. Appeal Br. 10; Reply Br. 3–4. Instead, the present claims recite an abstract idea using generic components as discussed *supra*, in §§ I.C.1. and I.C.2. or at best, improving an abstract idea—not an inventive concept.

Appellant does not argue claims 2–28 separately, but asserts the § 101 rejection of those claims should be withdrawn for at least the same reasons as argued for independent claim 1. Appeal Br. 5–10. Based on our review of dependent claims 2–17 and 19–27, these claims do not recite additional features that would transform the abstract idea embodied in claims 1, 18, and 28 into an inventive concept. Accordingly, we sustain the Examiner's rejection of: (1) independent claims 1, 18, and 28; and (2) dependent claims 2–17 and 19–27 under 35 U.S.C. § 101.

II. Claims 1–28 Rejected Under 35 U.S.C. § 103

A. Claims 1–3, 18, and 28

The Examiner finds Yetisgen-Yildiz teaches automatically identifying follow-up recommendations from electronically formatted radiology reports such as computer tomography, magnetic resonance, and ultrasound, which the Examiner maps to the limitation "the identified follow-up recommendations in electronically formatted prior medical reports according to the imaging modality of the imaging examination order" recited in claim

1. Final Act. 8–9 (citing Yetisgen-Yildiz, Abstract, § 3, Fig. 1, Table 1). The Examiner finds Yetisgen-Yildiz does not explicitly teach filtering. Final Act. 8–9; Ans. 6. However, the Examiner finds Jones teaches parsing medical reports by imaging modality and filtering the medical reports by imaging modality to display only relevant medical reports, which the Examiner maps to the limitation "filtering . . . according to the imaging modality of the imaging examination order." Final Act. 8–9 (citing Jones ¶¶ 17–19, 36); Ans. 6–7.

Appellant argues Jones fails to cure the deficiencies of Yetisgen-Yildiz because Jones does not teach follow-up recommendations and, therefore, cannot teach filtering them. Appeal Br. 11. Appellant argues Jones' drop down box is based on the modality of the order item being filtered; that is, there is no reference to any non-list items, whereas the claims require filtering the follow-up recommendations according to the modality of the imaging examination order from which the follow-up recommendation was identified. Appeal Br. 11–12; Reply Br. 4–5. We disagree with Appellant.

At the outset, one cannot show nonobviousness "by attacking references individually" where the rejections are based on combinations of references. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (citing *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)). In this case, the Examiner relies on Yetisgen-Yildiz to teach automatically identifying follow-up recommendations from electronically formatted radiology reports such as computer tomography, magnetic resonance, and ultrasound, which teaches the limitation "the identified follow-up recommendations in electronically formatted prior medical reports according to the imaging

modality of the imaging examination order" recited in claim 1. Yetisgen-Yildiz, Abstract, § 3, Fig. 1, Table 1 (cited at Final Act. 8–9). The Examiner relies on Jones to teach parsing medical reports by imaging modality and filtering the medical reports by imaging modality to display only relevant medical reports, which teaches the limitation "filtering . . . according to the imaging modality of the imaging examination order." Jones ¶¶ 17–19, 36 (cited at Final Act. 8–9); Ans. 6–7. We agree with the Examiner's findings regarding the teachings of Yetisgen-Yildiz and Jones.

Appellant does not argue claims 2, 3, 18, and 28 separately, but rather asserts the § 103 rejection of those claims should be withdrawn for at least the same reasons as previously argued for independent claim 1. Appeal Br. 10–12. However, for the reasons discussed above, we are not persuaded the Examiner erred regarding the §103 rejection of claim 1. Accordingly, we sustain the Examiner's rejection of: (1) independent claims 1, 18, and 28; and (2) dependent claims 2 and 3 under 35 U.S.C. § 103.

B. Claims 4–17 and 19–27

The Examiner finds Yetisgen-Yildiz teaches a vector is a binary (i.e., 0 or 1) vector to indicate the presence of the phrase and that the vector undergoes further processing using a mathematical algorithm, such as MaxEnt algorithm that determines the relevancy of the recommendations based on the entropy, which the Examiner maps to the limitation "the identified follow-up recommendations . . . [and] for each identified follow-up recommendation a likelihood that a sentence described by a vector contains a recommendation relevant to the follow-up imaging examination" recited in claim 4. Final Act. 11 (citing Yetisgen-Yildiz, §§ 3.3.1–3.3.2). The Examiner finds Yetisgen-Yildiz does not explicitly teach determining a

score for each of the identified follow-up recommendations. Final Act. 12; Ans. 7–8. However, the Examiner finds Downs teaches determining a score for each of identified documents using vectors representation, which the Examiner maps to the limitation "determining a score." Final Act. 12 (citing Downs ¶¶ 17, 38–40); Ans. 7–8.

Appellant argues Downs does not cure Yetisgen-Yildiz's shortcomings because Downs' relevance score for a document is not a relevance score for a follow-up recommendation. Appeal Br. 12–13; Reply Br. 5.

At the outset, one cannot show nonobviousness "by attacking references individually" where the rejections are based on combinations of references. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (citing *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)). In this case, the Examiner relies on Yetisgen-Yildiz to teach a vector is a binary (i.e., 0 or 1) vector to indicate the presence of the phrase and that the vector undergoes further processing using a mathematical algorithm, such as MaxEnt algorithm that determines the relevancy of the recommendations based on the entropy, which teaches the limitation "the identified follow-up recommendations. . . [and] for each identified follow-up recommendation a likelihood that a sentence described by a vector contains a recommendation relevant to the follow-up imaging examination" recited in claim 1. Yetisgen-Yildiz, §§ 3.3.1–3.3.2 (citing Final Act. 11). The Examiner also finds that Downs teaches determining a score for each of identified documents using vectors representation, which teaches the limitation "determining a score." Downs ¶¶ 17, 38–40 (citing Final Act. 12); Ans. 7–8. We agree with the Examiner's findings regarding the teachings of Yetisgen-

Yildiz and Downs.

Appellant does not argue claims 5–17 and 19–27 separately, but rather asserts the § 103 rejection of those claims should be withdrawn for at least the same reasons as argued for dependent claim 4. Appeal Br. 12–13. However, for the reasons discussed above, we are not persuaded the Examiner erred regarding the §103 rejection of claim 4. Accordingly, we sustain the Examiner's rejection of claims 4–17 and 19–27 under 35 U.S.C. § 103.

We have only considered those arguments that Appellant actually raised in the Briefs. Arguments Appellant could have made, but chose not to make, in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv).

CONCLUSION

Claim(s) Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1–28	101	Eligibility	1–28	
1–3, 18, 28	103	Yetisgen-Yildiz, Jones,	1–3, 18, 28	
4–16, 19–27	103	Yetisgen-Yildiz, Jones, Downs	4–16, 19–27	
17	103	Yetisgen-Yildiz, Jones, Downs, Mullin	17	
Overall Outcome			1–28	

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). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED