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465 Columbus Avenue
Suite 340
Valhalla, NY 10595

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marianne.fox@philips.com
katelyn.mulroy@philips.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CAROLINA RIBBING, MARTIN WEIBRECHT,
and
PETER K. BACHMANN

Appeal 2017-010606
Application 13/513,428[1]
Technology Center 3600

Before CARLA M. KRIVAK, HUNG H. BUI, and JON M. JURGOVAN, *Administrative Patent Judges*.

BUI, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants seek our review under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 26–42, which are all the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.[2]

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[1] According to Appellants, the real party in interest is Koninklijke Philips Electronics N.V. App. Br. 2.

[2] Our Decision refers to Appellants' Appeal Brief ("App. Br.") filed January 13, 2017; Examiner's Answer ("Ans.") mailed June 12, 2017; Reply Brief ("Reply Br.") filed August 7, 2017; Final Office Action ("Final Act.") mailed August 26, 2016; and original Specification ("Spec.") filed June 1, 2012.

STATEMENT OF THE CASE

Appellants' invention relates to a diagnostic method and apparatus "for continuous storage and joint analysis of both image and non-image medical data" by "multivariate analysis . . . on a features vector generated for a patient of interest to determine a proposed diagnosis for the patient." Title (capitalization altered); Abstract.

Claims 26, 33, and 38 are independent. Representative claim 26 is reproduced below:

> 26. An apparatus comprising:
> a database that is configured to store medical data of a plurality of patients, the medical data of each patient including medical image data and non-image medical data;
> a multivariate analysis (MVA) engine that is configured to:
> receive a features vector that is a representation of the patient in a multidimensional space in which the MVA engine operates, and
> provide at least one diagnosis based on the values of the features vector;
> a vector generator that is configured to:
> receive the medical data of a patient of interest from the database,
> provide a feature value corresponding to each feature of the features vector from the patient's medical data, and
> provide the features vector to the MVA engine to obtain the at least one diagnosis; and
> a user interface that is configured to provide the at least one diagnosis to a user;
> wherein:
> the vector generator is configured to identify a feature for which the medical data of the patient is insufficient to obtain a missing feature value;
> the apparatus includes a padding component that is configured to provide a default value as the missing feature

> value, the default value being a value that is not expected to have an effect on the diagnosis provided by the MVA engine; and
>
> the padding component is configured to alert the user that a default value cannot be provided when any default value for the missing feature value is expected to change the diagnosis provided by the MVA engine.

App. Br. (Claims App.) 15–20.

Examiner's Rejections

(1) Claims 26–32 stand rejected under 35 U.S.C. § 101 as being directed to software *per se*, i.e., not falling within any of the four statutory categories of patentable subject matter. Final Act. 2, 5.

(2) Claims 26–42 stand rejected under 35 U.S.C. § 101 as being directed to an abstract idea without significantly more. Final Act. 2–11.

ANALYSIS

Rejection of claims 26–32 under 35 U.S.C. § 101 as not falling within any statutory category

The Examiner rejected independent claim 26 as "not directed towards at least one of the four statutory categories" because the broadest reasonable interpretation of the claimed "apparatus comprising a 'database', an 'engine', a 'generator', a 'user interface', and a 'component'" encompasses software *per se* as the claim does not recite "any hardware structure." Final Act. 2; Ans. 2.

We do not agree with the Examiner's rejection. As Appellants explain, the database and user interface in claim 26 are disclosed as being implemented in hardware. App. Br. 7–8; Reply Br. 2–3. Specifically, the claimed "database . . . configured to store medical data of a plurality of patients" includes a storage device, and the claimed "user interface that is

configured to provide the at least one diagnosis to a user" and "alert the user that a default value cannot be provided" is a physical device such as a display or touch screen. *See* App. Br. (Claims App.) 15 (Claim 26); Reply Br. 2–3 (citing Spec. 6:30, 7:27–30, Fig. 1); *see also* Spec. 7:8–12, 8:26, 10:26–28, 13:1. Thus, claim 26 is not directed to software *per se* as it includes hardware components. Accordingly, we do not sustain the Examiner's rejection of independent claim 26 and its dependent claims 27–32 under 35 U.S.C. § 101 as directed to software *per se*.

Rejection of claims 26–42 under 35 U.S.C. § 101 as directed to a judicial exception without significantly more

In rejecting claims 26–42 under 35 U.S.C. § 101, the Examiner finds the claims are directed to an abstract idea of "collecting patient data, analyzing the patient data, and providing certain results of the collection and analysis," which is similar to abstract ideas previously identified by the courts. Ans. 4; Final Act. 4. Specifically, the Examiner finds the claims' abstract idea is similar to "comparing new and stored information and using rules to identify options," and "collecting information, analyzing it, and displaying certain results of the collection and analysis (Electric Power Group)." Final Act. 4; Ans. 3 (citing *Electric Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016)).

Appellants argue independent claims 26, 33, and 38 are not directed to the generic abstract idea asserted by the Examiner, but rather to a patent-eligible automated medical diagnostic system "rooted in computer technology, to provide a possible diagnosis" based on multivariate feature

sets constructed from large, but incomplete collections of patient medical records. App. Br. 11; Reply Br. 4–6.

To determine whether subject matter is patentable under § 101, the Supreme Court has set forth a two part test "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). The first step in the analysis is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts," such as an abstract idea. *Id.* (citation omitted). For computer-related technologies, "the first step in the *Alice* inquiry . . . asks whether the focus of the claims is on the *specific asserted improvement* in computer capabilities" (which would be eligible subject matter) or instead "on a process that qualifies as an 'abstract idea' for which *computers are invoked merely as a tool*" (which would be ineligible subject matter). *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36, 1338 (Fed. Cir. 2016) (emphasis added). "If the claims are not directed to an abstract idea [or other patent-ineligible concept], the inquiry ends. If the claims are 'directed to' an abstract idea, then the inquiry proceeds to the second step of the *Alice* framework." *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1312 (Fed. Cir. 2016).

The second step in the *Alice* framework 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.* (citing *Mayo Collaborative Services v. Prometheus Labs., Inc.*, 566 U.S. 66, 78 (2012)). 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.* (citing *Mayo*, 566 U.S. at 72–73).

Here, the Examiner has analogized the claims to *Electric Power Group*. Ans. 3. However, the Examiner's reliance is misplaced because the claims in *Electric Power Group* were merely "collecting and analyzing information, without *more*"—*such as* "identifying a particular tool for presentation" or using an "inventive set of components or methods, such as measurement devices or techniques, that would generate new data." *See Electric Power Grp.*, 830 F.3d at 1354–55 (emphasis added).

The claims before us are different than those in *Electric Power Grp.*, and we agree with Appellants, the claims "**do not claim an abstract idea**"; rather, the claims provide a solution to a technical problem of recognizing medical conditions and establishing timely diagnoses from large, incomplete, and constantly updating medical records. Reply Br. 4–6; App. Br. 11. Particularly, we find the present claims are analogous to *Enfish*.

In *Enfish*, the Federal Circuit explained that the term "'directed to'" under step one of the *Alice* framework, "applies a stage-one filter to claims, considered in light of the specification, based on whether 'their character as a whole is directed to excluded subject matter.'" *Enfish*, 822 F.3d at 1335 (internal citation omitted). The Federal Circuit further explained that improvements in computer-related technology are not inherently abstract, and thus, it is "relevant to ask whether the claims are directed to an improvement to computer functionality versus being directed to an abstract idea, even at the first step of the *Alice* analysis." *Id.* Specifically, the Federal Circuit differentiated between claims that focus on an improvement

in computer capabilities and claims that focus on an abstract idea "for which computers are invoked merely as a tool." *Id.* at 1336. In *Enfish*, the Federal Circuit determined that the claimed self-referential database table was directed to an improvement in the functioning of a computer and not "a situation where general-purpose computer components are added post-hoc to a fundamental economic practice or mathematical equation." *Id.* at 1339. Thus, the court determined that the claims at issue were not directed to an abstract idea and, therefore, the claims were patent eligible under 35 U.S.C. § 101. *Id.*

Here, the diagnostic system and methods of independent claims 26, 33, and 38 are directed to the creation of multivariate feature sets ("features vectors") based on patients' medical records to enable a computer to provide a diagnosis based on values in those features. Reply Br. 6; App. Br. 11; *see* Spec. 4:13–5:4, 10:31–11:6. The multivariate feature sets each provide a representation of a patient in a multidimensional space using feature values that (i) correspond to the patient's medical data in the patient's medical records or (ii) correspond to medical data missing (and not obtainable) from patient's existing medical records. *See* App. Br. (Claims App.) 15 (Claim 26). The feature values corresponding to missing patient information are *default values* that *enable* the MVA-based diagnostic system to provide a medical diagnosis in the presence of missing data, the *default values not otherwise expected to have an effect on the diagnosis* provided by the MVA engine. *See* App. Br. (Claims App.) 15 (Claim 26); *see* Spec. 11:19–12:2, Figs. 2–3. That is, providing the claimed default values solves "a problem that is specific to a computer's inability to properly execute a multi-variate analysis without complete input information," thus enabling the MVA

system to give timely diagnoses from incomplete and constantly updating patient data. Reply Br. 6; *see also* App. Br. 11; Spec. 4:10–12, 7:5–8, 9:32–10:10, 15:27–16:8. Appellants' claimed solution also determines when it is appropriate to provide such default values, and "alert[s] the user that a default value cannot be provided when any default value for the missing feature value is expected to change the diagnosis provided by the MVA engine." *See* App. Br. (Claims App.) 15–20 (Claim 26); Spec. 12:31–13:5. The claimed automated diagnostic system, therefore, identifies possible diagnoses from large, incomplete, and constantly updating sets of medical records, while also alerting the user (nurse, physician, etc.) when patient's records are missing a "test result . . . critical to the diagnosis, such that a proposed diagnosis [by the MVA engine] should not be presented at all in the absence of this critical diagnostic test." *See* Spec. 12:3–8, Fig. 4.

Given the discussion in the Specification regarding the improvements to medical diagnostic systems resulting from the claimed multivariate analysis on feature sets constructed from large, incomplete, and updating medical records, claims 26, 33, and 38, as a whole, cannot be said to be directed to an abstract idea, but to a solution rooted in computer technology as the Appellants have argued. As the claims are not directed to an abstract idea under the first step of the *Alice* analysis, we need not proceed to step two of the analysis. *See Enfish*, 822 F.3d at 1336, 1339.

For these reasons, we do not sustain the Examiner's rejection of claims 26, 33, and 38, and their dependent claims 27–32, 34–37, and 39–42 as directed to non-statutory subject matter under 35 U.S.C. § 101.

CONCLUSION

On the record before us, we conclude Appellants have demonstrated the Examiner erred in rejecting (i) claims 26–32 under 35 U.S.C. § 101 as directed to software *per se*, and (ii) claims 26–42 under 35 U.S.C. § 101 as directed to an abstract idea without significantly more.

DECISION

As such, we REVERSE the Examiner's final rejection of claims 26–42 under 35 U.S.C. § 101.

REVERSED