UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte DIMITAR V. BARONOV, EVAN J. BUTLER, JESSE M. LOCK,
and MICHAEL F. MCMANUS

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Appeal 2016-005663[1]
Application 13/826,441[2]
Technology Center 3600

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Before KENNETH G. SCHOPFER, TARA L. HUTCHINGS, and
MATTHEW S. MEYERS, *Administrative Patent Judges*.

SCHOPFER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the rejection of claims

1, 2, 4, 6–11, 13, 14, 16–19, 26, 28, and 31. We have jurisdiction under 35

U.S.C. § 6(b).

We AFFIRM.

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[1] Our decision references the Appeal Brief ("Appeal Br.," filed Oct. 5, 2015)
and Reply Brief ("Reply Br.," filed May 4, 2016), and the Examiner's
Answer ("Ans.," mailed Mar. 4, 2016) and Final Office Action ("Final
Act.," mailed Nov. 12, 2014). The record includes a transcript of the oral
hearing held September 21, 2017.
[2] According to Appellants, the real party in interest is Etiometry Inc. Appeal
Br. 3.

BACKGROUND

According to the Specification, "[t]he present disclosure relates to systems and methods for risk-based patient monitoring. More particularly, the present disclosure relates to systems and methods for assessing the current and future risks of a patient by combining data of the patient from various different sources." Spec. 2.

CLAIMS

Claim 1 is illustrative of the appealed claims and recites:

1. A computer-implemented method for risk-based monitoring of a patient, comprising:

generating, by the computer, predicted probability density functions of internal state variables for a time step t_{k+1}, each of the internal state variables describing a parameter physiologically relevant to at least one of a treatment and a condition of a patient at a time step t_{k+1}, wherein the predicated probability density functions are calculated using posterior estimated probability density functions for each of the internal state variables from a preceding time step, using the formula:

$$P(ISVs(t_{k+1}) \mid M(t_k)) = \int_{ISVs \in ISV} P(ISVs(t_{k+1}) \mid ISVs(t_k)) P(ISVs(t_k) \mid M(t_k)) \, dISVs;$$

acquiring, with the computer from at least one physiological sensor coupled to the patient, and storing in the computer accessible memory, data associated with a plurality of the internal state variables each describing a parameter physiologically relevant to at least one of a treatment and a condition of the patient at a time step t_{k+1};

generating, with the computer and using Bayes theorem, posterior estimated probability density functions for the plurality of the internal state variables for the time step t_{k+1} at least by computing the conditional probability density functions of the acquired data given the internal state variables and the predicated probability density functions of internal state variables;

        identifying, with the computer, from the generated posterior probability density functions of the internal state variables at time step t_{k+1}, into which of a first plurality of possible patient states the patient is currently categorizable; and

        generating a probability value associated with each identified possible patient state.

Appeal Br. 38.

REJECTION

The Examiner rejects claims 1, 2, 4, 6–11, 13, 14, 16–19, 26, 28, and 31 under 35 U.S.C. § 101 as directed to non-statutory subject matter.

DISCUSSION

Appellants argue the claims as a single group. *See* Appeal Br. 25–36. We select claim 1 as representative and claims 2, 4, 6–11, 13, 14, 16–19, 26, 28, and 31 stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Alice Corp. Pty. Ltd. v. CLS Bank International, 134 S. Ct. 2347 (2014) identifies a two-step framework for determining whether claimed subject matter is judicially-excepted from patent eligibility under § 101.

According to *Alice* step one, "[w]e must first determine whether the claims at issue are directed to a patent-ineligible concept," such as an abstract idea. *Alice*, 134 S. Ct. at 2355.

> The "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—after all, they take place in the physical world. *See Mayo*, 132 S. Ct. [1289,] 1293 [(2012)] ("For all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.") Rather, the "directed to" inquiry 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."

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>*Internet Patents Corp. v. Active Network, Inc.,* 790 F.3d 1343,
>1346 (Fed. Cir. 2015); *see Genetic Techs. Ltd. v. Merial L.L.C.,*
>818 F.3d 1369, 1375, 2016 WL 1393573, at *5 (Fed. Cir. 2016)
>(inquiring into "the focus of the claimed advance over the prior
>art").

Enfish, LLC v. Microsoft Corp., 822 F.3d 1327, 1335 (Fed. Cir. 2016). "The 'abstract idea' step of the inquiry calls upon us to look at the 'focus of the claimed advance over the prior art' to determine if the claim's 'character as a whole' is directed to excluded subject matter." *Affinity Labs of Tex., LLC v. DIRECTV, LLC,* 838 F.3d 1253, 1257–58 (Fed. Cir. 2016) (citing *Elec. Power Grp., LLC v. Alstom S.A.,* 830 F.3d 1350, 1353 (Fed. Cir. 2016); *Enfish,* 822 F.3d at 1335.

In rejecting claim 1, the Examiner finds that the claim is directed to "the basic concept of predicting patient health risks and diagnoses." Final Act. 2. The Examiner explains that "the current invention is directed towards diagnosing and evaluating a patient with the most probable diagnosis, and then subsequently making decisions for the treatment of the patient." *Id.* at 3–4. The Examiner also explains that "[d]ecision making for the patient may be deemed organizing human activities, as the treatment decisions affect the activities of those involved in the treatment." *Id.* at 4. Still further, the Examiner finds "that the current invention is also directed towards the abstract idea of a mathematical formula/relationship." *Id.* at 5. With respect to the abstract ideas cited by the Examiner, the Examiner finds that Appellants have "not provided any rationale explaining *how* the current invention transforms the abstract ideas . . . into significantly more than the abstract ideas themselves." *Id.*

Appellants first argue that the Examiner has failed to raise a prima facie rejection under 35 U.S.C. § 101. Appeal Br. 25. In support,

Appellants raise three issues. First, Appellants assert that the rejection "failed to assess the elements of the claims and failed to clearly and specifically articulate a reasoned rationale to support the rejection." *Id.* at 26 (emphasis omitted). Appellants' main concern here is that the rejection is conclusory and fails to provide "analysis of the language, elements . . . or substance of any claim." *Id.* Second, Appellants assert that the alleged abstract idea is an erroneous characterization of the claims because the claims are not directed to predicting health risks and diagnoses. *Id.* at 27. Third, Appellants assert that "Appellants have refuted the rejection under § 101 and the Office Action failed to address or rebut the Appellants' arguments." *Id.* (emphasis omitted).

We are not persuaded.

The Federal Circuit has repeatedly noted that "the prima facie case is merely a procedural device that enables an appropriate shift of the burden of production." *Hyatt v. Dudas*, 492 F.3d. 1365, 1369 (Fed. Cir. 2007) (citing *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992)). The court has, thus, held that the USPTO carries its procedural burden of establishing a prima facie case when its rejection satisfies the requirements of 35 U.S.C. § 132 by notifying the applicant of the reasons for rejection, "together with such information and references as may be useful in judging of the propriety of continuing the prosecution of [the] application." *See In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011) (alteration in original) (quoting 35 U.S.C. § 132). Thus, all that is required of the Office is that it set forth the statutory basis of the rejection, and the reference or references relied on, in a sufficiently articulate and informative manner as to meet the notice requirement of § 132. *Id.*; *see also Chester v. Miller*, 906 F.2d 1574, 1578

(Fed. Cir. 1990) (Section 132 "is violated when the rejection is so uninformative that it prevents the applicant from recognizing and seeking to counter the grounds for rejection.").

Appellants do not contend that the Examiner's rejection under § 101 was not understood or that the rejection otherwise fails to satisfy the notice requirements of § 132. Indeed, Appellants' understanding of the rejection is clearly manifested by their response as set forth in the Briefs. Further, it is not clear to us that Appellants' contentions, beyond the concern that the Examiner's analysis is cursory, speak to whether the Examiner has established a prima facie case. Rather, Appellants address the alleged mischaracterization of the claims with respect to the alleged abstract ideas presented by the Examiner. However, these issues do not show how Appellants were not provided sufficient notice of the reasons for the rejection. And with respect to the alleged conclusory nature of the rejection, we are not persuaded because, as noted, Appellants' arguments here and as discussed below clearly show that Appellants sufficiently understand the rejection presented in the Final Action.

Appellants next argue that "[t]he claims are directed to patent-eligible subject matter because the claims are not 'directed to' an 'abstract idea' within the meaning of *Alice*." Appeal Br. 30 (emphasis omitted). In support, Appellants first assert that the abstract idea presented by the Examiner is outside the broadest reasonable interpretation of the claims. *Id.* Appellants also assert that the alleged abstract idea is not the type of abstract idea giving rise to invalidity under *Alice*. *Id.*

We do not agree.

As noted above, the Examiner finds that the claims are directed to the

abstract idea of predicting patient health risks and providing diagnoses, and on a broader level, the Examiner finds that the claims are directed to a mathematical formula/relationship. We agree that the Examiner's characterization is correct. To the extent Appellants assert that the claims do not embody a prediction of patient health risks and diagnoses, but rather are directed to generating probabilities of a possible patient state (*see* App. Br. 30), this distinction fails to apprise us of Examiner error. At the end of the day, both concepts take physiological data from the patient and provide a probability of the patient's health status.

Further, we cannot distinguish the claims from the concept of using physiological data as inputs to a mathematical relationship, i.e. claim 1 generates probability densities based on the formula provided in the claim, measures physiological data, and uses the probability densities and measured data to generate probability densities based on another mathematical relationship (Bayes theorem). We find these steps similar to the steps that the Federal Circuit determined were patent ineligible in *Electric Power*. In *Electric Power*, the method claims at issue were directed to performing real-time performance monitoring of an electric power grid by collecting data from multiple data sources, analyzing the data, and displaying the results. *Elec. Power Grp. LLC*, 830 F.3d at 1351–52. The Federal Circuit held that the claims were directed to an abstract idea, explaining that "[t]he advance they purport to make is a process of gathering and analyzing information of a specified content, then displaying the results, and not any particular assertedly inventive technology for performing those functions." *Id.* at 1354.

Accordingly, we find that independent claim 1 involves nothing more than generating probabilities based on known data, receiving data, determining a probable status based on predefined levels of change, and presenting corresponding information, i.e. probability values — activities squarely within the realm of abstract ideas. *See, e.g., Elec. Power Grp., LLC*, 830 F.3d at 1353–54 (When "[t]he focus of the asserted claims" is "on collecting information, analyzing it, and displaying certain results of the collection and analysis," the claims are directed to an abstract idea.); *see also Accenture Glob. 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.).

Finally, with respect to step one of *Alice*, Appellants argue that the claimed invention would not preempt all applications of the alleged abstract idea, i.e. the claims do not preempt all methods of predicting patient health risks or diagnoses. Appeal Br. 33–34. Although the Supreme Court has described "the concern that drives this exclusionary principle [i.e., the exclusion of abstract ideas from patent eligible subject matter] as one of pre-emption," *Alice*, 134 S. Ct. at 2354, characterizing pre-emption as a driving concern for patent eligibility is not the same as characterizing pre-emption as the sole test for patent eligibility. "The Supreme Court has made clear that the principle of preemption is the basis for the judicial exceptions to patentability" and "[f]or this reason, questions on preemption are inherent in and resolved by the § 101 analysis." *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) (citing *Alice*, 134 S. Ct. at 2354).

Yet although "preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility." *Id.*

Step two of *Alice* is "a 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.'" *Alice*, 134 S. Ct. at 2355 (alteration in original) (citing *Mayo*, 132 S. Ct. at 1294).

Similar to the situation in *Electric Power*, we find nothing sufficient to remove the claims here from the class of subject matter held to be ineligible for patenting. As the court explained in *Electric Power*, "merely selecting information, by content or source, for collection, analysis, and display does nothing significant to differentiate a process from ordinary mental processes, whose implicit exclusion from § 101 undergirds the information-based category of abstract ideas." *Elec. Power Grp.*, 830 F.3d at 1355. As the Examiner points out, "[t]he claims [here] require no more than a generic computer to perform generic computer functions that are well-understood, routine and conventional activities previously known to the industry." Final Act. 2.

With respect to *Alice* step two, Appellants first argue that the Examiner has acknowledged that the claim limitations define significantly more than the abstract idea.[3] Appeal Br. 35. Second, Appellants argue that

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[3] We acknowledge that the Examiner "concedes that the recited limitations themselves, including the formula, are not well understood, routine and conventional activities known to the industry." Final Act. 4. However, the Examiner finds that "receiving data, processing the received data to then calculate, using the formula, a new set of data, and then subsequently identifying particular data *are* well understood, routine and conventional

the limitations of the claim, taken individually or together "do more than list steps that are incidental to using a computer to 'diagnose' a patient." *Id.* at 36. Appellants continue that the steps are not generic computer functions and that the use of a mathematical formula here is akin to the use of formulas in *Diamond v. Diehr*, 450 U.S. 175, 177–78 (1981) because they "transform the process into an inventive application of the formula." *Id.*

We are not persuaded.

First, we note that there is no indication in the claim or specification that any specialized computer hardware or other inventive computer components are required to perform the steps of the claim. The Specification merely describes that the methods are "computer-implemented" using "computer accessible memory" and that the system may include a processor, memory, and a network interface. *See, e.g.,* Spec. 4, 11. Second, we find that the steps of the claim taken individually relate to only the manipulation of data using a generic computer or acquiring data using known physiological sensors. And taken as whole, the claim simply recites the concept of using physiological data, either from a database or measured from a patient, as variables in a series of mathematical formulas, i.e. the steps taken together do no more than provide instructions to apply the abstract idea of using data in multiple formulas to generate a probability value. In short, we find the claims here are similar to those addressed in

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activities that may be performed by a *generic* computer." *Id.* The Examiner continues that "the fact that the recited algorithm itself is not well understood or routine in the industry does not preclude the *function of calculating a value using* the algorithm from being a well understood, routine and conventional function for a *generic computer* to perform." *Id.* at 5.

Electric Power. Appellants do not persuade us otherwise as Appellants do little more than list the order of steps in the claim and assert that the claim amounts to "significantly more." *See* Appeal Br. 36. Thus, Appellants do not persuasively explain how the application of mathematical equations here transforms the claimed process into an inventive application of the formulas included.

Based on the foregoing, we are not persuaded of reversible error in the rejection of claim 1. Accordingly, we sustain the rejection. We also sustain the rejection of claims 2, 4, 6–11, 13, 14, 16–19, 26, 28, and 31, which fall with claim 1.

CONCLUSION

We AFFIRM the rejection of claims 1, 2, 4, 6–11, 13, 14, 16–19, 26, 28, and 31 for the reasons discussed herein.

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).

<u>AFFIRMED</u>