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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ARIE TZVIELI, GIL THIEBERGER, and
ARI M. FRANK

Appeal 2019-002405
Application 15/832,871
Technology Center 3700

Before JOSEPH A. FISCHETTI, CYNTHIA L. MURPHY, and
KENNETH G. SCHOPFER, *Administrative Patent Judges*.

SCHOPFER, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–22. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM and enter a NEW GROUND OF REJECTION pursuant to our authority under 37 C.F.R. § 41.50(b).

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Facense Ltd. Appeal Br. 3.

BACKGROUND

The Specification discloses systems and methods for identifying a person's dominant nostril and using that information for purposes including scheduling or suggesting activities. *See, e.g.*, Spec. ¶¶ 13–15.

CLAIMS

Claims 1 and 19 are the independent claims on appeal and recite:

1. A system configured to suggest activities according to the dominant nostril, comprising:

a sensor configured to take measurements of a user; wherein the measurements are indicative of the user's dominant nostril; and

a computer configured to:

predict, based on the measurements, which of the user's nostrils will be the dominant nostril at a future time; and

responsive to predicting that the right nostril will be dominant at the future time, suggest having at the future time a first activity, which is more suitable for a right dominant nostril than a second activity.

19. A method for suggesting activities according to dominant nostril, comprising:

utilizing a sensor to take measurements of a user; wherein the measurements are indicative of the user's dominant nostril;

predicting, based on the measurements, which of the user's nostrils will be the dominant nostril at a future time; and

responsive to predicting that the right nostril will be dominant at the future time, suggesting having at the future time a first activity, which is more suitable for a right dominant nostril than a second activity.

Appeal Br. 32, 35–36.

REJECTIONS

1. The Examiner rejects claims 19–22 under 35 U.S.C. § 101 as claiming a judicial exception without significantly more.
2. The Examiner rejects claims 1–22 under 35 U.S.C. § 112(a) as failing to comply with the enablement requirement.
3. The Examiner rejects claims 1–22 under 35 U.S.C. § 112(a) as failing to comply with the written description requirement.
4. The Examiner rejects claims 18, 21, and 22 under 35 U.S.C. § 112(b) as indefinite.

DISCUSSION

Subject Matter Eligibility

Principles of Law

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 U.S. 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 Court’s two-part 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

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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, 67 (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 waterproof cloth, vulcanizing India rubber, smelting ores” (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1853))); 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 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 191 (“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 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.* (citation omitted) (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 part 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.* (alterations in original) (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.*

In January 2019, the U.S. Patent and Trademark Office (USPTO) published revised guidance on the application of § 101. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“2019 Revised Guidance”).² “All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance.” *Id.* at 51; *see also* October 2019 Update at 1.

Under the 2019 Revised Guidance and the October 2019 Update, 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

² In response to received public comments, the Office issued further guidance on October 17, 2019, clarifying the 2019 Revised Guidance. USPTO, *October 2019 Update: Subject Matter Eligibility* (the “October 2019 Update”) (available at https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf).

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human activity such as a fundamental economic practice, or mental processes) (“Step 2A, Prong One”); and

(2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 08.2017, Jan. 2018)) (“Step 2A, Prong Two”).³

2019 Revised Guidance, 84 Fed. Reg. at 52–55.

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look, under Step 2B, 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.

2019 Revised Guidance, 84 Fed. Reg. at 52–56.

Step One of the Mayo/Alice Framework

Under the first step of the *Alice* framework, we “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 Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (quoting *Elec.*

³ This evaluation is performed by (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception, and (b) evaluating those additional elements individually and in combination to determine whether the claim as a whole integrates the exception into a practical application. *See* 2019 Revised Guidance - Section III(A)(2), 84 Fed. Reg. 54–55.

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Power Grp., LLC v. Alstom S.A., 830 F.3d 1350, 1353 (Fed. Cir. 2016), *cert. denied*, 137 S. Ct. 1230 (2017)).

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 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.” *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015).

Enfish, LLC v. Microsoft Corp., 822 F.3d 1327, 1335 (Fed. Cir. 2016). In other words, the first step of the *Alice* framework “asks whether the focus of the claims is on the specific asserted improvement in [the relevant technology] . . . or, instead, on a process that qualifies as an ‘abstract idea’ for which computers are invoked merely as a tool.” *Id.* at 1335–36; *see also* 2019 Revised Guidance, 84 Fed. Reg. at 54–55.

Revised Guidance Step 2A, Prong One

Consistent with the first step of the *Mayo/Alice* framework and *Step 2A, Prong One*, of Office Guidelines (*see* 2019 Revised Guidance, 84 Fed. Reg. at 53–54), the Examiner determines that claim 19 recites “purely mental processes.” Ans. 3; *see also* Final Act. 2. We agree. Claim 19 recites “predicting . . . which of the user’s nostrils will be the dominant nostril at a future time” and “responsive to predicting that the right nostril will be dominant at the future time, suggesting having at the future time a first activity, which is more suitable for a right dominant nostril than a second activity.” No particular structure is required to perform these steps and the steps only call for an evaluation based on certain measurements followed by a suggestion based on the evaluation, i.e., a judgement

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regarding a recommendation. Thus, claim 19 recites an evaluation and a judgement, which are concepts that can be performed in the human mind, i.e., a mental process as identified in the Revised Guidance. 84 Fed. Reg. at 52.

Revised Guidance Step 2A, Prong Two

Under *Step 2A, Prong Two* of the 2019 Revised Guidance, we look to whether the claims “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,” i.e., “integrates the . . . judicial exception into a practical application,” such that it is not directed to the identified abstract idea. 2019 Revised Guidance, 84 Fed. Reg. at 54.

The only additional element expressly recited in claim 19 is “utilizing a sensor to take measurements of a user; wherein the measurements are indicative of the user’s dominant nostril.” We agree with the Examiner that this limitation, which requires only the use of a generic sensor, represents insignificant extra-solution activity that is not central to the purpose of the claimed method. *See* Revised Guidance, 84 Fed. Reg. at 55, n. 31.

Appellant also argues that the claim necessarily requires a computer when read in light of the Specification. *See* Appeal Br. 9–10. Even if we were to agree, we find no indication in the Specification, nor does the Appellant direct us to any indication, that the operations recited in claim 19 require any specialized computer hardware or other inventive computer components, i.e., a particular machine, invoke any asserted inventive programming, or that the claimed invention is implemented using other than generic computer components to perform generic computer functions. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1256 (Fed. Cir.

2014) (“[A]fter *Alice*, there can remain no doubt: recitation of generic computer limitations does not make an otherwise ineligible claim patent-eligible.”)

The Specification discloses that the arrangement use “an optional computer 16, which may include a processor, memory, a battery and/or a communication module.” Spec. ¶ 62. The Specification also discloses that the embodiments “may be performed by a computer program having instructions for implementing the method.” *Id.* at ¶ 214. “[T]he instructions may be stored on a computer-readable medium, which may optionally be a non-transitory computer-readable medium. In response to execution by a system including a processor and memory, the instructions cause the system to perform operations of the method.” *Id.* Additionally, the Specification describes:

The computer (400, 410) may be implemented in various ways, such as, but not limited to, a server, a client, a personal computer, a network device, a handheld device (e.g., a smartphone), an HMS (such as smart glasses, an augmented reality system, and/or a virtual reality system), a computing device embedded in a wearable device (e.g., a smartwatch or a computer embedded in clothing), a computing device implanted in the human body, and/or any other computer form capable of executing a set of computer instructions. Herein, an augmented reality system refers also to a mixed reality system. Further, references to a computer or processor include any collection of one or more computers and/or processors (which may be at different locations) that individually or jointly execute one or more sets of computer instructions. For example, a first computer may be embedded in the HMS that communicates with a second computer embedded in the user's smartphone that communicates over the Internet with a cloud computer.

Id. at ¶ 365.

Further, analyzing the claim as a whole confirms the Examiner's determination that the claim is directed to an abstract idea. A review of the Specification demonstrates that the claim elements are not improvements in the functioning of a computer, or an improvement to other technology or technical field. *See supra*. And, the claimed features, alone and in combination, are no more than generic components operating in their ordinary capacity. Moreover, we find no evidence that the additional elements, alone or in combination, implement the abstract idea with a particular machine that is integral with the claim; effect a transformation or reduction of a particular article to a different state or thing; apply the judicial exception in some other meaningful way beyond generally linking the use of the abstract idea to a particular environment; or otherwise integrate the abstract idea into a practical application. *See 2019 Revised Guidance at 55* (identifying exemplary considerations indicative that additional elements may have integrated the exception into a practical application).

Step Two of the Mayo/Alice Framework — Revised Guidance Prong 2B

Under step two of the *Alice* framework, we find supported the Examiner's determination that the additional elements of claim 19 do not amount to significantly more than the abstract idea. Final Act. 3.

Taking the claim elements separately, the claim recites the use of a generic sensor to take measurements and steps for predicting an outcome based on the measurements and providing an output in the form of a suggestion. The claim does not provide any significant implementation details regarding these steps, and to the extent the claim requires a computer to make a prediction and a suggestion, the Specification makes clear that these elements may be performed by generic computer equipment. *See*

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supra. Thus, we determine that the claim “limitations require no improved computer resources [the Appellant] claims to have invented, just already available computers, with their already available basic functions, to use as tools in executing the claimed process” performed by the claimed system. *SAP America, Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1169–70 (Fed. Cir. 2018). Additionally, the executable instructions recited in claim that may be performed by the computer or processor by use of the program code are purely conventional. *See Elec. Power*, 830 F.3d at 1355 (gathering, sending, monitoring, analyzing, selecting, and presenting information does not transform the abstract process into a patent-eligible invention); *see also SAP Am.*, 898 F.3d at 1168 (citing *Elec. Power*, 830 F.3d at 1353, 1355) (“[E]ven if a process of collecting and analyzing information is ‘limited to particular content’ or a particular ‘source,’ that limitation does not make the collection and analysis other than abstract.”).

Considered as an ordered combination, the limitations of claim 19 add nothing that is not already present when the steps are considered separately. The combination of taking measurements, analyzing those measurements, and providing an outcome is routine and conventional. *See supra*; *see Elec. Power*, 830 F.3d at 1354–56 (holding that the functions and sequence of receiving, detecting, analyzing, displaying, accumulating, updating, and deriving data was abstract). Additionally, “[i]t has been clear since *Alice* that a claimed invention’s use of the ineligible concept to which it is directed cannot supply the inventive concept that renders the invention ‘significantly more’ than that ineligible concept.” *BSG Tech LLC v BuySeasons, Inc.*, 899 F.3d 1281, 1290 (Fed. Cir. 2018).

Thus, we conclude that claim 19 fails to provide an inventive concept because the additional elements recited in the claim do not provide significantly more than the recited judicial exception.

Appellant's Arguments

Appellant first argues that the subject matter of the claims is not similar to subject matter of the cases cited by the Examiner. Appeal Br. 7. More specifically, Appellant asserts that the Examiner's citation of these cases is indicative of the Examiner's oversimplified characterization of the claims. *Id.* at 8. We disagree for the reasons provided above. Specifically, as discussed, the claim limitations are either related to extra-solution activity or recite purely mental processes. The level of abstraction at which the Examiner describes the invention does not change the accuracy of the Examiner's determination. *Apple v. Ameranth, Inc.*, 842 F.3d 1229, 1240 (Fed. Cir. 2016) ("An abstract idea can generally be described at different levels of abstraction"). More particularly, for example, regardless of the level of abstraction, we find that the "predicting" step of the claim is an abstract mental process.

Appellant also indicates that the fact that no prior art has been cited by the Examiner "strengthen(s) the motion that the claims are directed to non-abstract subject matter." Appeal Br. 8. We disagree. Even a "brilliant" abstract idea "does not by itself satisfy the § 101 inquiry." *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 591 (2013). A novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent-ineligible. *See Mayo*, 566 U.S. at 90.

Further, Appellant argues that the claims are directed to an improvement in computer related technology. Appeal Br. 10. However,

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Appellant fails to explain what elements of the claim represent an improvement in computer related technology or how they do so. *Id.*

Conclusion Regarding Eligibility

Based on the foregoing, we sustain the Examiner's rejection of claim 19 under 35 U.S.C. § 101. Appellant relies on substantially the same arguments regarding dependent claims 20–22. Thus, we also sustain the rejection of claims 20–22, for the same reasons as claim 19. *See* 37 C.F.R. § 41.37(c)(1)(iv).

New Ground

Pursuant to our authority under 37 C.F.R. § 41.50(b), we enter a new ground of rejection for claims 1–18 under 35 U.S.C. § 101 as reciting a judicial exception without significantly more. Claim 1, for example, recites a system including a sensor for taking measurements and a computer configured to make a prediction based on the measurements and to make a suggestion based on that prediction. Appeal Br. 32. We determine that an analysis of the Revised Guidance with respect to this claim would be substantially the same as the analysis of claim 19 above. Thus, for the reasons discussed above with respect to claim 19, we determine that claim 1 recites the judicial exception of a mental process, which is an abstract idea. We also find that when considering this claim as a whole, the additional elements provided in the claim, i.e. the generically claimed sensor and computer, do not provide a practical application of this abstract idea. Finally, for the reasons discussed above, claim 1 fails to provide an inventive concept because the generically recited thus, additional elements recited in the claim do not provide significantly more than the recited judicial exception. The remaining claims 2–18 are directed more specific process parameters regarding the predicting and suggesting functions of the

computer, and thus, we determine that these claims are also directed to the abstract idea of a mental process.

Thus, as to the system claims, they

are no different from the method claims in substance. The method claims recite the abstract idea implemented on a generic computer; the system claims recite a handful of generic computer components configured to implement the same idea. This Court has long “warn[ed] ... against” interpreting § 101 “in ways that make patent eligibility ‘depend simply on the draftsman’s art.’

Alice Corp. Pty. Ltd., 573 U.S. at 226 (alterations in original).

Enablement

With respect to this rejection, Appellant groups all claims together. *See* Appeal Br. 12–25. We select claim 1 as representative of this group, and the remaining claims 2–22 will stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

It is by now well-established law that the test for compliance with the enablement requirement in the first paragraph of 35 U.S.C. § 112 is whether the disclosure, as filed, is sufficiently complete to enable one of ordinary skill in the art to make and use the claimed invention without undue experimentation. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

“Enablement is not precluded by the necessity for some experimentation However, experimentation needed to practice the invention must not be undue experimentation. The key word is ‘undue,’ not ‘experimentation.’” *Id.* at 736–737.

To evaluate whether a disclosure would require undue experimentation, the Federal Circuit has adopted the following factors to be considered:

the breadth of the claims;

the nature of the invention;
the state of the prior art;
the level of predictability in the art;
the relative skill of those in the art;
the amount of direction or guidance presented in the Specification;
the existence of working examples; and
the quantity of experimentation needed to make or use the invention
based on the content of the disclosure.

Id. at 737. The Examiner’s analysis must consider all the evidence related to each of these factors, and any conclusion of non-enablement must be based on the evidence as a whole. *Id.*

We agree with and adopt the Examiner’s findings with respect to this rejection, in particular, with respect to the Examiner’s application of the *Wands* factors. *See* Final Act. 3–7; *see also* Ans. 6–15. We emphasize and add the following.

The Breadth of the Claims

Neither the Examiner nor the Appellant appears to have addressed this factor. We find that the independent claim 1 is broad and provides little guidance within the claim itself as to how, for example, a computer may be configured to make a prediction regarding which of a user’s nostrils will be the dominant nostril. The claim merely recites a computer that is configured to “predict, based on measurements, which of the user’s nostrils will be the dominant nostril at a future time.” Given the lack of implementation details in this limitation, one of ordinary skill would need to look to the written disclosure for guidance in order to make and use the full scope of the invention.

*The State of the Prior Art*⁴

The Examiner acknowledges that machine learning algorithms, such as those referred to in the written disclosure, were known in the art at the time of invention. Final Act. 5. However, the Examiner finds that machine learning models do not refer to a well-defined algorithm or group of algorithms known in the art. Hence, the Examiner finds “[m]achine learning is a term used to describe a class of statistical models which share some basic common characteristics, but the specific characteristics of any particular machine learning model or algorithm may vary greatly in implementation.” *Id.* The Examiner finds that the Specification merely provides a suggestion to use a machine learning model without further guidance regarding implementation details. *Id.* We add that the Specification does not appear to refer to any prior art evidence showing or suggesting a particular model or models that may be used to further guide one of ordinary skill in the art in making and using the claimed invention.

Appellant asserts

One skilled in the art would recognize that the actual features selected when implementing the system may depend on many factors, such as the types of sensors used (e.g., single pixels vs. arrays), the type of models used, preferences that implementer may have, and more. However, given the nature of the problem, which is a well-defined prediction problem (predict the dominant nostril at a future time), and the ability of an implementer to obtain as much data as needed (by monitoring one or more users' respiration over time to follow changes in the dominant nostril),

⁴ We note that the Examiner and Appellant discuss, under this heading, whether the Specification provides sufficient guidance to one of ordinary skill in the art. *See* Final Act. 5; *see also* Appeal Br. 16–22. This is discussed below under a different sub-heading.

it would be entirely in the capability of one skilled in the art to implement the system without undue experimentation.

Appeal Br. 19. Thus, Appellant generally indicates that one of ordinary skill in the art would be aware of how to implement a model in accordance with the problem and features discussed in the written disclosure. *Id.* However, Appellant appears to provide only argument in this regard without evidence. To the extent Appellant provides evidence under this factor, it appears to only be related to the tolerance of machine learning models to irrelevant features in the data and the ability to narrow those features. *See id.* at 20, 23.

The Level of One of Ordinary Skill in the Art

The Examiner finds that the level of skill in the art would be reasonably high. Final Act. 5. However, the Examiner finds that the level of skill in the art would not be so high such that one would “be able to ascertain the details required to build a predictive model for performing the claimed tasks.” *Id.* The Examiner also finds that one of ordinary skill in the art would not “be aware of [Appellant’s] specific definition of activities requiring more verbal-analytical skills and less spatial skills” or activities related to logic, locomotive skills, empathy, imagination, or higher self-awareness. *Id.* at 5–6. The Examiner also finds that one of ordinary skill would not understand what Appellant “believes to be the requisite degree of suitability for a dominant nostril.” *Id.* at 6.

We agree with Appellant to the extent it is argued that one may rely on common sense in determining what types of activities fall into the categories listed by the Examiner. *See* Appeal Br. 23. Appellant also provides evidence regarding such activities. *Id.* We also agree with

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Appellant that one of ordinary skill would understand what is required for a nostril to be “dominant” based on the Specification. *See, e.g.*, Spec. ¶ 10.

The Amount of Direction or Guidance in the Specification

The Examiner finds that the Specification provides lists of algorithms, feature values, possible predictions, and a description of activities without:

any description of a combination of specific features and a model that would produce the specific prediction desired by Applicant; any description of how suitability of activities may be determined; any description of how to ascertain whether an activity requires, for example, less empathy and imagination than another activity; and any description of how certain feature values “describing aspects of the future time,” such as the location where the user is expected to be at the future time or an activity that the user is expected to partake at the future time, might be obtained/determined

Final Act. 6. We agree. We also agree that the Specification provides only “[a] suggestion to use a machine learning model or algorithm for a specific application without further guidance regarding the requisite characteristics . . . [to] provide a skilled artisan with enough information to successfully implement such a system.” *Id.* at 5.

Appellant argues that the details discussed by the Examiner are “specific implementation-level details that are not required by one skilled in the art to implement the claimed invention.” Appeal Br. 24. Appellant also asserts that

One skilled in the art would recognize that the actual features selected when implementing the system may depend on many factors, such as the types of sensors used (e.g., single pixels vs. arrays), the type of models used, preferences that implementer may have, and more. However, given the nature of the problem, which is a well-defined prediction problem (predict the dominant nostril at a future time), and the ability of an implementer to obtain as much data as needed (by monitoring one or more users'

respiration over time to follow changes in the dominant nostril), it would be entirely in the capability of one skilled in the art to implement the system without undue experimentation. The specification points out reasonable types of features to use. Any one skilled in the art would be able to generate a useful feature set that corresponds to them.

Id. at 19.

Yet, we agree with the Examiner that the specific features required to implement, i.e. to make and use, the claimed invention are required to properly define the invention. Ans. 14. Appellant has merely presented an idea that one might use machine learning with certain factors in order to arrive at a prediction and a suggestion as claimed. But, the Specification does not provide specific guidance on what factors and algorithms should be used to practice the claim.

Appellant responds that the “[t]he [S]pecification provides ample details regarding how to predict the future dominant nostril.” Reply Br. 3 (citing Spec. ¶ 199). However, we find that this paragraph supports the conclusion that the Specification does not provide substantial guidance in how to make or use the specific invention claimed. This paragraph states:

In another embodiment, the computer 455 predicts the dominant nostril at the future by generating feature values and utilizing a machine learning-based model to estimate the dominant nostril at the future time (e.g., left nostril dominance, right nostril dominance, or balanced breathing). Optionally, the feature values comprise one or more feature values describing aspects of the future time such as the time to which it corresponds (e.g., how much time ahead the future time is), the location the user is expected to be at the future time, and/or an activity the user is expected to partake at the future time. Optionally, the feature values may include one or more features values corresponding to a state of the user at an earlier time that precedes the future time, such as the user’s dominant nostril (e.g., as determine based on the measurements 454), manipulation of the dominant nostril

performed by the user recently, previous measurements of the user taken after the user manipulated the dominant nostril and/or practiced pranayama and/or listened to brainwave entrainment, an activity the user had during the earlier time, and/or values of physiological signals of the user at the earlier time. In one embodiment, the machine learning-based model is trained based on samples that include measurements 454 taken at certain earlier times and their corresponding dominant nostrils following certain durations after the certain earlier times.

Spec. ¶ 199. We find that this portion of the Specification does not provide any specific implementation details beyond suggesting that certain factors may be used with a machine learning model to produce a prediction. Further, coupled with the lack of any working examples (*see below*), one of ordinary skill is left mostly in the dark regarding what model and factors may be used to produce a suitable result, i.e. a result that provides a prediction and suggestion as claimed.

The Existence of Working Examples

The Examiner finds that the Specification does not provide any working examples. Final Act. 6. We agree and note that Appellant does not appear to address this factor.

Quantity of Experimentation Required

The Examiner finds:

Based on the disclosure, a skilled artisan would be required to undertake significant and undue experimentation to: determine a set of feature values that would produce Applicant's desired results; select a machine learning model, appropriate for the set of feature values, that would predict the future state of nostril dominance as claimed by Applicant; build, test, train, and operate the machine learning model using the feature values; determine a set of activities that meet the criteria set forth by Applicant in the claims; and determine how to apply the predictions of the model to selecting an appropriate activity.

Final Act. 6–7. We agree that the lack of sufficient implementation details in the Specification indicates that a significant amount of experimentation would be required to perform the tasks listed by the Examiner.

As noted above, Appellant provides evidence showing that “machine learning models are very tolerant to an excessive (even exponential) number of irrelevant features” and features can be narrowed down using selection techniques known in the art. Appeal Br. 20–21. However, given the lack of guidance to produce the results claimed, as discussed above, we are not persuaded that this evidence would significantly reduce the amount of experimentation required to make or use the invention.

Based on the foregoing, we determine that the written disclosure is not sufficiently complete to enable one of ordinary skill in the art to make and use the claimed invention without undue experimentation. Accordingly, we sustain the rejection of claim 1. For the same reasons, we sustain the rejection of claims 2–22, which fall with claim 1.

Written Description

With respect to this rejection, Appellant groups all claims together. *See* Appeal Br. 26–27. We select claim 1 as representative of this group, and the remaining claims 2–22 will stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

“[T]he test for the sufficiency of the written description ‘is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.’” (*Vasudevan Software, Inc. v. MicroStrategy, Inc.*, 782 F.3d 671, 682 (Fed. Cir. 2015).) “[T]he written description requirement is not met if the specification merely describes a ‘desired result.’” (*Id.*) The “telling question is whether the specification shows

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possession by the inventor” of how this desired result “is achieved.” (*Id.* at 683.) Further, the “Examining Computer-Implemented Functional Claim Limitations for Compliance with 35 U.S.C. § 112” (“2019 § 112 Guidance”) assists us in discerning whether a claim reciting computer components complies with 35 U.S.C. § 112. (*See* Federal Register Vol. 84, No. 4, 57–62.) If the Specification does not provide a disclosure of the recited software “in sufficient detail to demonstrate to one of ordinary skill in the art that the inventor possessed the invention that achieves the claimed result, a rejection under 35 U.S.C. 112(a) for lack of written description must be made.” (*Id.*)

The Examiner finds that the Specification fails to provide:

any description of a combination of specific features and a model that would produce the specific prediction desired by Applicant; any description of how suitability of activities may be determined; any description of how to ascertain whether an activity requires, for example, less empathy and imagination than another activity; and any description of how certain feature values “describing aspects of the future time”, such as the location where the user is expected to be at the future time or an activity that the user is expected to partake at the future time, might be obtained/determined.

Final Act. 7–8. The Examiner also indicates that the Specification does not provide an “the algorithm of steps/procedures taken to perform the function [claimed, which] must be described with sufficient detail so that one of ordinary skill in the art would understand how the inventor intended the function be performed.” *Id.* at 8.

Appellant contends that paragraphs 83, 88, 90, 114–117, and 193–198 “provide enough instruction for one skilled in the art to implement the claimed invention.” Appeal Br. 26. Appellant also asserts that “[i]t would not be difficult for one skilled in the art to implement specific functions for

calculating feature values of the types mentioned in the specification, which suite [sic] the actual characteristics of the implemented system.” *Id.* at 27. However, we agree with the Examiner that whether a person of ordinary skill in the art may be able to implement the invention is not relevant to a written description analysis. Ans. 15–16. Appellant does not respond to the Examiner’s finding that the Specification provides only a list of possible features without reasonably indicating that Appellant possessed any particular solution to the problem of predicting a future state of a dominant nostril or suggesting an activity based thereon. *See* Ans. 16. Rather, Appellant merely reiterates that “[o]ne skilled in the art would recognize that all these different approaches will work and choose a specific one that he/she prefers to meet the specific characteristics of their implemented system.” Reply Br. 4. This argument does not address whether the inventor here was in possession of the claimed invention at the time of filing.

Further, we have reviewed the portions of the Specification cited by Appellant, and we agree with the Examiner that they only provide lists of possible features that may be used to perform the claimed functions, without any specific implementation details that would reasonably convey that the inventors were in possession of a system or method that actually performed those functions.

Based on the foregoing, we sustain the rejection of claim 1 here. We also sustain the rejection of claims 2–22, which fall with claim 1.

Indefiniteness

With respect claim 18, the Examiner determines the claim is indefinite because it is unclear if the limitations “when conversing in the first mode . . .” and “when conversing in the second mode . . .” are intended “to further define the phrases ‘is more logical’ and ‘is more emotional’ or if they place

further limitations on the first and second modes . . . because there is no clear link between these limitations.” Final Act. 10. Appellant argues that the Specification provide examples regarding these terms such that they are “sufficiently clear.” Final Act. 28 (citing Spec. ¶¶ 212, 213). We agree with Appellant that, when the claim is read in light of the Specification, the language of the claim is not indefinite. Specifically, the Specification discloses that a “more logical” theme provides “more facts and/or explanations” and a “more emotional” theme provides “more emotional phrases, abstract images, social-related data, and/or less factual information.” Spec. ¶ 212. Thus, when read in light of the written disclosure, one of ordinary skill in the art would understand that the provision of “more facts and detailed explanations” and the provision of “emotional phrases, abstract images, and social-related data” more specifically define the claimed first and second modes, respectively.

Based on the foregoing, we do not sustain the rejection of claim 18, here.

With respect to claim 21, the Examiner determines that “[i]t is unclear what ‘assisting the user’ amounts to in terms of a positively recited structural element or manipulative step.” Final Act. 10. We disagree with the Examiner. At best, the Examiner has shown that the language “assisting the user” is broad, but the Examiner has not explained adequately why the language is unclear or why one of ordinary skill in the art would not understand the scope of the claim. Further, we agree with Appellant that the Specification provides sufficient guidance such that one of ordinary skill in the art would understand the scope of this limitations. *See* Appeal Br. 29 (citing Spec. ¶ 201). Accordingly, we do not sustain this rejection of claim 21.

With respect to claim 22, the Examiner finds that it is unclear how the “learning the typical sequence” step is to be performed. Final Act. 10. Appellant argues that “learning a sequence of events from data is a rudimentary task that would be known to one skilled in the art and thus does not require additional instruction to be recited in the claims.” Appeal Br. 30. The Examiner responds that “[i]t is not clear what structures or acts are meant to be encompassed by” this limitation. Ans. 17. We determine that the Examiner has not explained adequately why the language at issue is unclear, rather than merely being broad. The breadth of a claim is not to be equated with indefiniteness. *See e.g., In re Miller*, 441 F.2d 689, 693 (CCPA 1971). Further, the claim itself provides further clarifying language for the “learning the typical sequence” limitation by requiring that this function is related to the switching of nostrils and based on measurements taken over an extended period of time. Thus, we do not sustain this rejection of claim 22.

CONCLUSION

We REVERSE the rejection of claims 18, 21, and 22 under 35 U.S.C. § 112(b). We AFFIRM the remaining rejections. We enter a new ground of rejection of claims 1–18 under 35 U.S.C. § 101.

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed	New Ground
19–22	101	Eligibility	19–22		1–18
1–22	112(a)	Enablement	1–22		
1–22	112(1)	Written Description	1–22		
18, 21, 22	112(b)	indefiniteness		18, 21, 22	

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed	New Ground
Overall Outcome			1-22		1-18

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). Section 41.50(b) provides that “[a] new ground of rejection . . . shall not be considered final for judicial review.”

Section 41.50(b) also provides that Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

- (1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner. . . .
- (2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136 (a). See 37 C.F.R. § 1.136 (a)(l)(iv).

AFFIRMED;
37 C.F.R. § 41.50(b)