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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/049,297	10/09/2013	Louis J. Wilson	WMDJ01-00002	1051
23990	7590	05/02/2019	EXAMINER	
DOCKET CLERK			LIN, JERRY	
P.O. DRAWER 800889			ART UNIT	
DALLAS, TX 75380			PAPER NUMBER	
			1631	
			NOTIFICATION DATE	
			DELIVERY MODE	
			05/02/2019	
			ELECTRONIC	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LOUIS J. WILSON, DALE B. MCDONALD,
and JAMES N. JOHNSTON¹

Appeal 2018-002995
Application 14/049,297
Technology Center 1600

Before JOHN G. NEW, RYAN H. FLAX, and RACHEL H. TOWNSEND,
Administrative Patent Judges.

FLAX, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) involving claims to a method for, apparatus configured for, and programming for a processor for outputting a sedative dosage based on a model and a calculation. Claims 1–20 are on appeal as rejected under 35 U.S.C. § 101. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.²

¹ Appellants identify themselves as the real party in interest. Appeal Br. 2.

² Herein we refer to the Specification of Oct. 9, 2013 (“Spec.”); the Final Office Action of Apr. 19, 2017 (“Final Action”); the Appeal Brief of Aug. 18, 2017 (“Appeal Br.”); the Examiner’s Answer of Nov. 29, 2017 (“Answer”); and the Reply Brief of Jan. 29, 2018 (“Reply Br.”).

STATEMENT OF THE CASE

The Specification states, “[t]his disclosure relates generally to the modeling and prediction of patient reactions. More specifically, this disclosure relates to an apparatus and method for modeling and predicting the sedative effects of drugs, such as propofol, on patients.” Spec. ¶ 1. The Specification also states:

many medical professionals may have little or no experience in administering propofol for sedation purposes during medical procedures. Moreover, even medical professionals who have experience administering propofol may have difficulty identifying the proper dosages of propofol for specific patients.

Id. ¶ 31. The Specification summarizes an embodiment of the invention, much like that claimed, as follows:

selecting one of multiple models based on (i) at least one of the characteristics and (ii) a sedation technique to be used. The method further includes calculating an index to the selected model using one or more of the characteristics. In addition, the method includes identifying a specified dosage of the sedative using (i) the selected model and (ii) the calculated index.

Id. ¶ 4, 58–61, Figure 17. The Specification further states, “the specific dosage(s) of propofol for a particular patient can vary based on the particular patient’s characteristics (such as height, weight, age, and race) and can be estimated using one or more models.” *Id.* ¶ 26. The Specification further states, “[i]t is possible to combine these various factors [i.e., height, weight, age, race, and co-administered doses of fentanyl and/or midazolam] to generate mathematical models representing propofol dosages. For example, in some embodiments, multiple models can be created for different

combinations of these factors.” *Id.* ¶ 37. The Specification describes using such models as follows:

the models can be used in any suitable manner. For example, a medical professional could select one of the models based on a particular patient’s race and a specific sedation technique to be used. The medical professional could then plug the patient’s data (such as height, weight, and age) into the selected model in order to obtain a predicted propofol dosage to be used during a medical procedure. At this point, the medical professional can use the predicted propofol dosage as a starting point and make any adjustments deemed necessary or desirable to the predicted dosage.

Id. ¶ 38, 58–61, Figure 17. The Specification also describes how a patient’s height, weight, and age are related in predicting sedative effects using the following mathematical formula:

$$K = \frac{\text{Height} * \text{Weight}}{\text{Age}}$$

where the mathematical result, “K,” is called a “patient factor.” *Id.* ¶ 39, 58–61, Figure 17. The Specification describes that the models and patient factor calculation, and the data used therein, can be processed using any suitable computing devices such as a desktop computer, a laptop computer, a smartphone, servers, and databases, generally. *Id.* ¶ 48–50, Figure 15.

Claims 1, 10, and 18 are independent claims; claim 1 is illustrative and is reproduced below:

1. A method comprising:

receiving characteristics of a patient to be administered a sedative for a medical procedure, the characteristics of the patient including a height, a weight, and an age of the patient;

selecting one of multiple models based on a sedation technique to be used;

calculating an index to the selected model using a formula of Height*Weight/Age, wherein Height is the patient's height, Weight is the patient's weight and Age is the patient's age;

identifying a specified dosage of the sedative using (i) the selected model and (ii) the calculated index; and

outputting the specified dosage of the sedative.

Appeal Br. 38 (Claims Appendix). Independent claims 10 and 18 recite the same steps, however, claim 10 includes these steps as programming for a processing device, which is part of an apparatus, and claim 18 includes the steps as stored program code to be executed by a processor.

The following rejection is appealed:

Claims 1–20 stand rejected under 35 U.S.C. § 101 as directed to an abstract idea without significantly more so as to provide an inventive concept. Answer 2; *see also* Answer 3–17.

DISCUSSION

“[T]he examiner bears the initial burden . . . of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). We have considered those arguments made by Appellants in the Appeal Brief and properly presented in the Reply Brief; arguments not so presented in the Briefs are deemed to have been waived. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2015); *see also Ex parte Borden*, 93 USPQ2d 1473, 1474 (BPAI 2010) (informative) (“Any bases for

asserting error, whether factual or legal, that are not raised in the principal brief are waived.”).

“Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.” *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71 (2012) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Claims directed to *nothing more* than abstract ideas (such as mathematical algorithms), natural phenomena, and laws of nature are not eligible for patent protection. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981); *accord* MPEP § 2106 (II) (discussing *Diehr*).

In analyzing patent-eligibility questions under the judicial exception to 35 U.S.C. § 101, the Supreme Court instructs us to “first determine whether the claims at issue are directed to a patent-ineligible concept.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 218 (2014). If the claims are determined to be directed to an ineligible concept we then move to a second step and “consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.* at 217 (quoting *Mayo*, 566 U.S. at 97).

In addition to this direction by the Supreme Court, the United States Patent and Trademark Office (“USPTO”) published revised guidance on the application of § 101. USPTO’s January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* (“2019 Guidance Memorandum”). Under this guidance, in step one of the *Mayo/Alice*

framework, in analyzing the issue of abstract ideas we first look to whether the claim recites:

(Step 1, Prong 1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human interactions such as a fundamental economic practice, or mental processes); and

(Step 1, Prong 2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)-(c), (e)-(h)).

Furthermore, under the guidance, regarding step two of the *Mayo/Alice* framework, only if a claim is determined to (1) recite a judicial exception and (2) not integrate that exception into a practical application, do we then proceed to (the *Mayo/Alice*) Step 2 and 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.

I. INDEPENDENT CLAIMS 1, 10, AND 18

As identified above, claims 1, 10, and 18 are substantially similar and, further, Appellants’ arguments there-over are also the same. Therefore, we address these claims as a group. Regarding *Mayo/Alice*’s step one, the Examiner determined that:

Claims 1-20 are directed to a method, apparatus, and non-transitory computer readable medium for identifying the specified dosage of a sedative. The claimed invention includes the steps receiving data of the patient, selecting a model, calculating an index using a mathematical formula, and identifying a specified dosage, and outputting the specified

dosage. Selecting a model required use of a mathematical algorithm as on page 18 in the specification. Calculating an index using a mathematical formula is a mathematical algorithm. Furthermore, identifying a specified dosage of the sedative using the model and calculated index is also a mathematical algorithm as stated on pages 19 and 20 of the specification. Mathematical algorithms are an abstract idea. Thus, the claimed invention is drawn to a judicial exception of an abstract idea. Dependent claims 2-9, 11-17, 19 and 20 are drawn to additional mathematical steps which are also abstract ideas.

Final Action 2; Answer 9–10, 14. The Examiner determined that the claims are also directed to a mental process because the limitations relating to *choosing or selecting* a mathematical model, and *identifying* the product of a selected model or calculated index, are mental steps (e.g., “[t]he mental step of choosing a particular mathematical model,” “the step of identifying . . . may [] also be seen as a mental step,” and “selecting a model is a mental step”). Answer 4–6, 10–11, 14–16.

We discern no error in the Examiner’s determinations. We analyze the record pursuant to the 2019 Guidance Memorandum and address Appellants’ arguments below.

STEP 1, PRONG 1

The 2019 Guidance Memorandum identifies three key concepts identified as abstract ideas:

- (a) mathematical concepts including “mathematical relationships, mathematical formulas or equations, mathematical calculations”;
- (b) certain methods of organizing human activity, such as “fundamental economic principles or practices,” “commercial or legal interactions,” and “managing personal behavior or relationships or interactions between people”;
- (c) mental processes including “observation, evaluation, judgment, [and] opinion.”

Here, the independent claims recite, *inter alia*, (1) “selecting one of multiple models based on a sedation technique to be used”; (2) “calculating an index to the selected model using a formula of $\text{Height} \times \text{Weight} / \text{Age}$, wherein Height is the patient’s height, Weight is the patient’s weight and Age is the patient’s age”; and (3) “identifying a specified dosage of the sedative using (i) the selected model and (ii) the calculated index.” Under the broadest reasonable interpretation, limitations (1) and (3) recite mental steps of selecting and identifying, which are judgments and opinions that can be performed in the mind. Likewise, under the broadest reasonable interpretation, limitation (2) recites a mathematical formula. Accordingly, we conclude the claims recite a mental process and a mathematical formula and, thus, an abstract idea.

The Federal Circuit has “recognize[d] that defining the precise abstract idea of patent claims in many cases is far from a ‘straightforward’ exercise.” *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1150 (Fed. Cir. 2016) (quoting *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014)). However, “we continue to ‘treat[] analyzing information by steps people [could] go through in their minds, or by mathematical algorithms, without more, as essentially mental processes within the abstract-idea category.’” *Id.* at 1146–47 (quoting *Electric Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016) (citations omitted)). The Federal Circuit has recognized that “a claim for a *new* abstract idea is still an abstract idea.” *Id.* at 1151. It is well-established that mental processes are abstract ideas. *CyberSource* instructs that “a method that can be performed by human thought alone is merely an abstract idea and

is not patent-eligible under § 101.” *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1373, 1375 (Fed. Cir. 2011) (“That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*.”). And, “[i]f a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is nonstatutory.” *Parker v. Flook*, 437 U.S. 584, 595 (1978).

Here, the claims recite steps for analyzing information, which people could go through in their minds, or by mathematical algorithms, which is essentially a mental processes within the abstract-idea category. Moreover, the claims recite calculating using a mathematical formula. These are abstract ideas.

STEP 1, PRONG 2

We next consider whether the claimed sedative dosing recommendation method/system includes additional elements that integrate the abstract idea into a practical application. Determining that the claimed abstract idea is integrated into a practical application requires identifying an additional element or a combination of additional elements in the claim to 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 exception.

Here, there is no practical integration of the abstract idea, rather, there is simply an additional step of receiving data and a step of outputting data, and potentially the usage of a generic computer to perform the abstract idea.

Other than the limitations directed to the abstract idea, discussed above, the invention is claimed at a very high level of generality and is only limited in the type of data used in forming models and in mathematical calculations. And, again, the end result of the claimed method (or the product of the claimed apparatus and computer program) is advice, amounting to data.

Here, it cannot be reasonably argued that the claims do not recite mental steps and a mathematical formula, as determined by the Examiner and as discussed above. Furthermore, it is this series of mental steps and math to which Appellants' invention, as claimed, is directed. There are no limitations requiring that the information derived from choosing a model and doing math result in actual actions being taken or anything other than data be produced. For example, there is no treatment (or sedation) required to be performed based on the mental steps and math. *Cf. Vanda Pharm. Inc. v. West-Ward Pharm. Int'l Ltd.*, 887 F.3d 1117 (Fed. Cir. 2018) (claims required using a natural relationship to perform a new treatment and were directed to the treatment and, so, were patent-eligible). Thus, there is no implementation of the abstract idea into a practical application.

Appellants argue the claims are not directed to an abstract idea, but rather, recite specific processes using particular information and techniques, specifically designed to achieve an improved technological result, and do not preempt other approaches using different information or techniques. Appeal Br. 8. Appellants also argue their claims are analogous to those found patent-eligible in *Enfish* and *McRO*. *Id.* at 8–9 (citing *Enfish, LLC v. Microsoft Corp.*, 822 F. 3d 1327 (Fed. Cir. 2016); *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016)). Appellants

essentially reiterate these arguments in the Reply Brief, focusing on the contention that not all claim limitations require math and the just-mentioned Federal Circuit precedent. *See* Reply Br. 2–10. These arguments are not persuasive.

Unlike *Enfish*, where the Federal Circuit found the claims to be patent-eligible as directed to an improvement in how computers function, here, although the claims are directed, essentially, to software or programming (if the method is not wholly performed in the mind), they are not “directed to a specific implementation of a solution to a problem in the software arts,” as were the claims in *Enfish*. *See Enfish*, 822 F.3d at 1339. Appellants’ invention does not improve how software functions on a computer, nor is it directed to a new type of software, but relates to software running a different algorithm for manipulating data, that data being medical information.

In *McRO* the Federal Circuit held claims that “set out meaningful requirement for [a] first set of rules” by which a computer could synchronize animated lip movements to spoken sounds, as a whole, were directed to “a process specifically designed to achieve an improved technological result,” that result being a computer-generated animation having automatically synchronized mouth movements, and were not directed to an abstract idea. *McRO*, 837 F.3d at 1316. Here, we have none of the claimed specificity of technological improvement the Federal Circuit found present in the invention of *McRO*. Also, contrary to *McRO*, where the ultimate product produced was a synchronized computer animation, here the result of the

claimed method or the output of the claimed product is the “output” of an identified specified dosage of sedative, which we deem to be mere advice.

As discussed above, the claimed invention (if not actually performed in the human mind) is software programming; it does not improve the functioning of a computer; it is not effecting a treatment for a medical condition, but only recommending some treatment; it is not transforming a machine or matter in any way. *See, e.g.*, MPEP § 2106.05(a)–(c). The only “implementations” of the abstract idea, as claimed, are directed to generic data processing (programming) and generic devices and the claims’ limitations to such amount to mere instruction to apply the abstract idea.

Moreover, tying the invention’s software to sedative dosing recommendations or a computer environment, i.e., a technical field, without more, is not a practical implementation of the abstract idea. *See, e.g.*, MPEP § 2106.05(h); *see also Parker v. Flook*, 437 U.S. 584, 588–90 (1978) (limiting an abstract idea to one field of use or adding token post-solution components did not make the concept patentable). Tying a claimed mental process or mathematical formula to specific data cannot turn an abstract idea into patent-eligible subject matter because “mere ‘[data-gathering] step[s] cannot make an otherwise nonstatutory claim statutory.’ *In re Grams*, 888 F.2d 835, 840 (Fed.Cir.1989) (quoting *In re Meyer*, 688 F.2d 789, 794 (CCPA 1982)).” *CyberSource*, 654 F.3d at 1370.

Appellants also argue there is an absence of preemption in view of the claimed invention (*see, e.g.*, Appeal Br. 9); however, it is well-established that, “[w]hile preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.”

Ariosa Diagnostics, Inc. v. Sequenom, Inc., 788 F.3d 1371, 1379 (Fed. Cir. 2015). “Where a patent’s claims are deemed only to disclose patent ineligible subject matter under the *Mayo*[/*Alice*] framework, as they are in this case, preemption concerns are fully addressed and made moot.” *Id.* Thus, this argument is also not persuasive.

STEP 2 – INVENTIVE CONCEPT

Regarding *Mayo/Alice*’s step two, the Examiner determined:

The claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception. The instant claims include additional elements of receiving characteristics outputting the specified dosage, an apparatus, a memory, a processing device, a non-transitory computer readable medium, and a computer readable computer code. Receiving characteristics and outputting the results of a mathematical algorithm is a well-known, conventional, and routine function of a general purpose computer. Similarly an apparatus, a memory, a processing device, a non-transitory computer readable medium, and a computer readable computer code are well-known, conventional, and routine components of a general purpose computer. Recitation of well-known, conventional, and routine functions and components are not sufficient to transform a judicial exception into patent eligible subject matter.

Final Action 2–3; Answer 10–11, 15–16. We discern no error in the Examiner’s determinations.

We are not persuaded that the Examiner erred in determining that the elements of claim 1, considering all elements both individually and as an ordered combination, do not amount to significantly more than the abstract ideas of “*a mental process*” and “*mathematical calculations*.” Looking at claim 1, for example, we ask what more is claimed once we exclude the

limitations directed to the abstract idea and, what we find is, essentially, nothing. The “select[ing],” “calculat[ing],” and “identify[ing]” limitations of claim 1, discussed above, are each and all directed to the abstract idea. Once removed from consideration, we are left with the collection of generic patient data and the outputting of advice.

The Federal Circuit has established that collecting, classifying, storing, and organizing data, regardless of whether such data manipulations are limited to a particular technological environment, is an abstract idea and, without more (which cannot be provided by generic components or steps used in their routine and customary ways), is not patent eligible. *See, e.g., Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335 (Fed. Cir. 2018) (claims directed to manipulating data for selective display using routine and conventional instructions/programming not patent-eligible); *SAP America, Inc. v. Investpic, LLC*, 890 F.3d 1016, 1018 (Fed. Cir. 2018) (claims directed to “nothing but a series of mathematical calculations based on selected information and the presentation of the results of those calculations” is merely an advancement in an abstract idea and patent-ineligible, even though physical things like databases and processors are claimed); *In re TLI Communications LLC Patent Litigation*, 823 F.3d 607 (Fed. Cir. 2016) (collecting and organizing data in the form of digital images is abstract and patent ineligible, and using computer systems in their generic ways do not add an inventive concept); *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343 (Fed. Cir. 2014) (extracting data from documents, recognizing information therefrom, and storing the information is abstract).

Appellants argue that “*virtually everything* in Claim 1 extends significantly beyond ‘receiving characteristics’ and ‘outputting the results of a mathematical algorithm.’” Appeal Br. 12. Appellants argue the specific process, specific data, and specific operations “never done before,” as recited in claim 1 (and 10 and 18), amount to significantly more than the abstract idea. *Id.*; *see also id.* at 22–23, 32–33. Appellants’ argument is not persuasive.

Once we strip away the limitations directed to the abstract idea, we are left with: “*receiving characteristics* of a patient to be administered a sedative for a medical procedure, the characteristics of the patient including a *height*, a *weight*, and an *age* of the patient;” and “*outputting* the specified dosage of the sedative.” Receiving patient data relating to height, weight, and age is absolutely routine, conventional, and well-known; it is data universally collected prior to any medical treatment or doctor visit, and especially used in determining dosing. Likewise, outputting a dosage (suggestion) as a result of considering data adds no inventive concept to the claimed invention when considered individually and with the other steps as an ordered combination.

For the above reasons, we are unpersuaded that the Examiner erred in determining claims 1, 10, and 18 to be patent-ineligible.

II. DEPENDENT CLAIM 19, AND DEPENDENT CLAIMS 2, 3, 11, AND 12

Appellants separately argued each of claims 2, 3, 11, 12, and 19. Claims 2 and 3 depend from claim 1, claims 11 and 12 depend from claim 10, and claim 19 depends from claim 18. Claim 19, the most comprehensive claim of the group, recites:

[as in claims 2 and 11] ***the characteristics of the patient further include a race of the patient;***

the computer readable program code that when executed causes the at least one processor to select one of multiple models comprises computer readable program code that when executed causes the at least one processor to [as in claims 2 and 11] ***select one of the multiple models based on the patient's race and the sedation technique to be used;*** and

[as in claims 3 and 12] ***the multiple models comprise different models associated with different sedation techniques.***

Appeal Br. 38, 41, 44 (emphasis and text added to highlight overlapping limitations). The limitations of claim 19 subsume those of these other dependent claims and Appellants' arguments for these claims also substantially overlap; therefore, we address these claims together. *See* Appeal Br. 13–14, 24–25, 34–35.

Regarding claims 2, 11, and 19, the Examiner determined the “selecting a model [step] is a mental step or a component of the mathematical algorithm,” which are mere extensions of the abstract idea to which the independent claims are directed, as discussed above. Answer 6, 11–12, 16. Regarding claims 3, 12, and 19, the Examiner determined the claimed identification of the multiple models and identifying race as a variable was “specifying data (i.e. models associated with different sedation techniques)[, which] does not change [the] abstract idea into a non-abstract idea (See *buySAFE, Inc. v Google, Inc.* 765 F.3d 1350, 112 U.S.P.Q.2d 1093 (Fed. Cir. 2014).” Answer 7, 12, 16. For each of claims 2, 3, 11, 12, and 19, the Examiner determined that “as an ordered combination with the parent claim[s], the instant claim[s] [are] still well-known, conventional and routine, because gathering data, performing an algorithm, and outputting the

results of an algorithm is well-known, conventional, and routine. Thus, the instant claim[s] [are] not patent eligible.” Answer 6–7, 11–12, 16. We discern no error in the Examiner’s determinations.

Under the *Mayo/Alice* Step 1, USPTO Prong 1 analysis, none of dependent claims 2, 3, 11, 12, and 19 add any further limitation to the subject matter of independent claims 1, 10, and 20 that is not also directed to the abstract idea, as discussed above. These dependent claims variously recite: (1) including “race” as another characteristic upon which models are based; (2) selecting a model based on race and sedation technique; and (3) the models are associated with different sedation techniques. Limitation (2) relating to *selecting*, under the broadest reasonable interpretation, amounts to mere judgment and opinion that can be performed in the mind; the other limitation identify data. Accordingly, we conclude the claims recite a mental process and, thus, an abstract idea.

Under the *Mayo/Alice* Step 1, USPTO Prong 2 analysis, these claims do not integrate the abstract idea into a practical application. Looking to what else the claims require other than the limitations directed to an abstract idea what we find are limitations (1) and/or (3), noted above, which require designating “race” and “sedation techniques” as data in establishing models. Mere data gathering, such as selecting or obtaining certain information or basing a calculation on certain information, is insignificant extra-solution activity, not a practical application. *See, e.g.*, MPEP 2106.05(g); *CyberSource*, 654 F.3d at 1375; *Mayo*, 566 U.S. at 79. “If a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is

nonstatutory.” *Parker*, 437 U.S. 584 (1978). Therefore, tying a claimed abstract idea to a specific technical field or certain data gathering, without more, as we see in Appellants’ claims here, is not a practical implementation of the abstract idea. *See, e.g., Parker*, 437 U.S. at 588–90; *CyberSource*, 654 F.3d at 1370 (citing *In re Grams*, 888 F.2d at 840; *In re Meyer*, 688 F.2d at 794); *see also* MPEP § 2106.05(h).

Under the *Mayo/Alice* Step 2, we analyze these claims to identify whether an additional element or combination of elements are recited that are more than well-understood, routine, and conventional activity in the field, and indicative of an inventive concept. In agreement with the Examiner’s determination, we conclude there are no such additional elements or combinations of elements recited. Considering the limitations directed to designating “race” and “sedation techniques” as data in establishing models, this is “gathering data, performing an algorithm, and outputting the results of an algorithm [and] is well-known, conventional, and routine,” as determined by the Examiner. *See, e.g., Answer* 6, 7, 11, 12, 16.

Appellants argue claims 2, 3, 11, 12, and 19 are “clearly not reciting merely a mathematical process” because “[s]electing one of multiple models based on a patient’s race and a sedation technique do not constitute a mathematical algorithm or generic function,” and, regarding claim 19, “selecting from among different models associated with different sedation techniques does not constitute a mathematical algorithm or generic function.” *Appeal Br.* 13, 14, 24, 25, 34; *see also generally Reply Br.* (dependent claims were not argued). This is not persuasive. As determined by the Examiner, these claim elements are mental steps integrated with a

mathematical algorithm. They recite an abstract idea. Appellants also argue, generally, for each claim that the claim elements “combine with its parent claim to create an ordered combination that is not well-understood, routine, or conventional and that is not previously known to the industry.” This is also not persuasive. Selecting race or a sedation technique amounts to mere selection of data, which is extra-solution activity and does not provide either a practical application or an inventive concept.

For the above reasons, we are unpersuaded that the Examiner erred in determining claims 2, 3, 11, 12, and 19 to be patent-ineligible.

III. DEPENDENT CLAIMS 4 AND 13

Appellants separately argued claims 4 and 13, which respectively depend from claims 3 (and 1) and 12 (and 10). Claims 4 and 13 each recite:

. . . wherein the models associated with the different sedation techniques comprise:

models associated with administration of propofol only;

models associated with administration of fentanyl and propofol;

models associated with administration of fentanyl, midazolam at a lower dosage, and propofol; and

models associated with administration of fentanyl, midazolam at a higher dosage, and propofol.

Appeal Br. 39, 42. Appellants’ arguments for these claims also substantially overlap; therefore, we address these claims together. *See* Appeal Br. 15, 25–26.

Regarding claims 4 and 13, the Examiner determined that the claimed *identifying* the administered sedatives with which the claimed models were

associated was “specifying data (i.e. models associated with different sedation techniques) [and] does not change an abstract idea into a non-abstract idea (See *buySAFE, Inc. v Google, Inc.* 765 F.3d 1350, 112 U.S.P.Q.2d 1093 (Fed. Cir. 2014). Thus, the instant claim[s] [are] drawn to a judicial exception.” Answer 7, 12. The Examiner also determined, “[f]urthermore, as an ordered combination with the parent claim, the instant claim is still well-known, conventional and routine, because gathering data, performing an algorithm, and outputting the results of an algorithm is well-known, conventional, and routine. Thus, the instant claim is not patent eligible.” We discern no error in the Examiner’s determinations.

Under the *Mayo/Alice* Step 1, USPTO Prong 1 analysis, neither of dependent claims 4 and 13 adds any further limitation to the subject matter of independent claims 1 and 10 that is not also directed to the abstract idea, discussed above. These dependent claims further require that the claimed models can be based on (the potential) administration of propofol only, or administration of propofol and fentanyl, or administration of propofol and fentanyl and a lower dose of midazolam, or administration of propofol and fentanyl and a higher dose of midazolam. Under the broadest reasonable interpretation, these limitations recite data selection for models. Such a recitation of data does not alter the fact that the claims recite a mental process and mathematical formula.

Under the *Mayo/Alice* Step 1, USPTO Prong 2 analysis, these claims do not integrate the abstract idea into a practical application. Looking to what else the claims require other than the limitations directed to the abstract idea what we find are limitations that require designating the above-

discussed (potentially) administered or (potentially) co-administered sedatives as data in establishing models. Mere data gathering, such as obtaining certain information or basing a calculation on certain information, is insignificant extra-solution activity, not a practical application. *See, e.g.*, MPEP 2106.05(g); *CyberSource*, 654 F.3d at 1375; *Mayo*, 566 U.S. at 79. Tying a claimed abstract idea to a specific technical field or certain data gathering, without more, as we see in Appellants' claims here, is not a practical implementation of the abstract idea. *See, e.g.*, *Parker*, 437 U.S. at 588–90; *CyberSource*, 654 F.3d at 1370 (citing *In re Grams*, 888 F.2d at 840; *In re Meyer*, 688 F.2d at 794); *see also* MPEP § 2106.05(h).

Under the *Mayo/Alice* Step 2, we analyze these claims to identify whether an additional element or combination of elements are recited that are more than well-understood, routine, and conventional activity in the field, and indicative of an inventive concept. In agreement with the Examiner's determinations, we conclude there are no such additional elements or combinations of elements recited. Considering the limitations directed to designating administered or co-administered sedatives as data in establishing models, this amounts to “gathering data, performing an algorithm, and outputting the results of an algorithm [and] is well-known, conventional, and routine,” as determined by the Examiner. *See, e.g.*, Answer 7, 12.

Appellants present identical arguments for claims 4 and 13 as presented for claims 2, 3, 11, 12, and 19, as discussed above. *See* Appeal Br. 15, 26. These arguments are also unpersuasive regarding the rejection of

claims 4 and 13. For the above reasons, we are unpersuaded that the Examiner erred in determining claims 4 and 13 to be patent-ineligible.

IV. DEPENDENT CLAIMS 5 AND 14

Appellants separately argued claims 5 and 14, which respectively depend from claims 1 and 10. The limitations of claims 5 and 14 are substantially identical; claim 5 recites:

different models are associated with different stages of the medical procedure, the different stages including at least an initial stage and a final stage; and

the method comprises identifying and outputting different specified dosages of the sedative for the different stages of the medical procedure.

Appeal Br. 39, 42 (claim 14 differs only in reciting the processing device of independent claim 10). Appellants' arguments for these claims also substantially overlap; therefore, we address these claims together. *See* Appeal Br. 16, 26–27.

Regarding claims 5 and 14, the Examiner determined that the claimed identification of the models' association with medical procedure stages, including an initial and final stage, and outputting related suggested dosages was, once more, merely "specifying data (i.e. models associated with different staged of medical procedure)[, which] does not change an abstract idea into a non-abstract idea (See *buySAFE, Inc. v Google, Inc.* 765 F.3d 1350, 112 U.S.P.Q.2d 1093 (Fed. Cir. 2014)." Answer 7, 12–13. The Examiner also determined:

In addition, as explained above, identifying dosages is a mathematical algorithm, and outputting dosages is well-known, conventional and routine. Thus, the instant claim[s] [are] drawn to a judicial exception. Furthermore, as an ordered combination

with the parent claim[s], the instant claim[s] [are] still well-known, conventional and routine, because gathering data, performing an algorithm, and outputting the results of an algorithm is well-known, conventional, and routine. Thus, the instant claim[s] [are] not patent eligible.

Id. We discern no error in these determinations.

Under the *Mayo/Alice* Step 1, USPTO Prong 1 analysis, neither of dependent claims 5 and 14 adds any further limitation to the subject matter of independent claims 1 and 10 that is not also directed to the abstract idea, discussed above. These dependent claims require that the claimed models can be based on an initial and/or final stage of a medical procedure and outputting related sedation advice. Under the broadest reasonable interpretation, these limitations recite data selection for models and outputting data. Such a recitation of data does not alter the fact that the claims recite a mental process and mathematical formula.

Under the *Mayo/Alice* Step 1, USPTO Prong 2 analysis, these claims do not integrate the abstract idea into a practical application. Looking to what else the claims require other than the limitations directed to an abstract idea what we find are limitations that identify the otherwise-claimed models to be associated with certain data (procedure stages) and that the otherwise-claimed outputting relates to this data (advised dosages per procedure stages). Mere data gathering, such as obtaining certain information or basing a calculation on certain information, is insignificant extra-solution activity, not a practical application. *See, e.g.*, MPEP 2106.05(g); *CyberSource*, 654 F.3d at 1375; *Mayo*, 566 U.S. at 79. Tying a claimed abstract idea to a specific technical field or certain data gathering, without more, as we see in Appellants' claims here, is not a practical implementation

of the abstract idea. *See, e.g., Parker*, 437 U.S. at 588–90; *CyberSource*, 654 F.3d at 1370 (citing *In re Grams*, 888 F.2d at 840; *In re Meyer*, 688 F.2d at 794); *see also* MPEP § 2106.05(h).

Under the *Mayo/Alice* Step 2, we analyze these claims to identify whether an additional element or combination of elements are recited that are more than well-understood, routine, and conventional activity in the field, and indicative of an inventive concept. In agreement with the Examiner’s determinations, we conclude there are no such additional elements or combinations of elements recited. Considering the limitations directed to identifying the otherwise-claimed models to be associated with certain data (procedure stages) and that the otherwise-claimed outputting relates to this data (advised dosages per procedure stages), this amounts to “gathering data, performing an algorithm, and outputting the results of an algorithm [and] is well-known, conventional, and routine,” as determined by the Examiner. *See, e.g., Answer 7, 12.*

Appellants present identical arguments for claims 5 and 14 as presented for the other dependent claims, as discussed above. *See Appeal Br. 16, 27.* These arguments are also unpersuasive regarding the rejection of claims 5 and 14. For the above reasons, we are unpersuaded that the Examiner erred in determining claims 5 and 14 to be patent-ineligible.

V. DEPENDENT CLAIMS 6, 15, AND 20

Appellants separately argued claims 6, 15, and 20, which respectively depend from claims 1, 10, and 18. The limitations of claims 6, 15, and 20 are substantially identical; claim 6 recites:

generating the models by:

obtaining information comprising sedation dosages and index values associated with multiple patients;

excluding a portion of the information; and

analyzing a remaining portion of the information to identify the models.

Appeal Br. 39, 42, 45. Appellants' arguments for these claims also substantially overlap; therefore, we address these claims together. *See* Appeal Br. 16–17, 27–28, 35.

Regarding these dependent claims' recited “obtaining,” “excluding,” and “analyzing” steps for generating models, the Examiner determined “the process of generating a model is a mathematical algorithm. The steps of excluding a portion of the information and analyzing the remaining portion of the information are mathematical steps.” Answer 8, 13, 17. We also note, as discussed above, that the Examiner determined regarding the independent claims that such steps “may also be seen as a mental step.” *See, e.g., id.* at 4–5. The Examiner further determined:

Obtaining information is a well-known, conventional, and routine data gathering step. In addition, specifying the data (i.e., sedation dosages and index values) does not change an abstract idea into a non-abstract idea (*See buySAFE, Inc. v Google, Inc.* 765 F.3d 1350, 112 U.S.P.Q.2d 1093 (Fed. Cir. 2014)). Furthermore, as an ordered combination with the parent claim, the instant claim[s] [are] still well-known, conventional and routine, because gathering data, performing an algorithm, and outputting the results of an algorithm is well-known, conventional, and routine. Thus, the instant claim[s] [are] not patent eligible.

Id. at 8, 13, 17. We discern no error in these determinations.

Under the *Mayo/Alice* Step 1, USPTO Prong 1 analysis, none of dependent claims 6, 15, and 20 adds any further limitation to the subject matter of independent claims 1, 10, and 18 that is not also directed to the abstract idea, discussed above. These dependent claims require that data is “obtained,” that data is “excluded,” and that data is “analyzed.” Under the broadest reasonable interpretation, these limitations recite data selection for models. Such a recitation of data does not alter the fact that the claims recite a mental process and mathematical formula.

Under the *Mayo/Alice* Step 1, USPTO Prong 2 analysis, these claims do not integrate the abstract idea into a practical application. Looking to what else the claims require other than the limitations directed to an abstract idea what we find are limitations requiring data be “obtained,” that data be “excluded,” and that data be “analyzed.” Mere data gathering, such as obtaining certain information or basing a calculation on certain information, is insignificant extra-solution activity, not a practical application. *See, e.g.*, MPEP 2106.05(g); *CyberSource*, 654 F.3d at 1375; *Mayo*, 566 U.S. at 79. Tying a claimed abstract idea to a specific technical field or certain data gathering, without more, as we see in Appellants’ claims here, is not a practical implementation of the abstract idea. *See, e.g.*, *Parker*, 437 U.S. at 588–90; *CyberSource*, 654 F.3d at 1370 (citing *In re Grams*, 888 F.2d at 840; *In re Meyer*, 688 F.2d at 794); *see also* MPEP § 2106.05(h).

Under the *Mayo/Alice* Step 2, we analyze these claims to identify whether an additional element or combination of elements are recited that are more than well-understood, routine, and conventional activity in the field, and indicative of an inventive concept. In agreement with the

Examiner's determinations, we conclude there are no such additional elements or combinations of elements recited. Considering the limitations directed to obtaining, excluding, and analyzing data, this amounts to "gathering data, performing an algorithm, and outputting the results of an algorithm [and] is well-known, conventional, and routine," as determined by the Examiner. *See, e.g.*, Answer 8, 13, 17.

Appellants present identical arguments for claims 6, 15, and 20 as presented for the other dependent claims, as discussed above. *See* Appeal Br. 17, 28, 35. These arguments are also unpersuasive regarding the rejection of claims 6, 15, and 20. For the above reasons, we are unpersuaded that the Examiner erred in determining claims 6, 15, and 20 to be patent-ineligible.

VI. DEPENDENT CLAIMS 7 AND 16

Appellants separately argued claims 7 and 16, which respectively depend from claims 6 (and 1) and 15 (and 10). The limitations of claims 7 and 16 are substantially identical; claim 7 recites:

. . . wherein excluding the portion of the information comprises:

identifying an average or median total time to discharge for the multiple patients; and

excluding the sedation dosages and index values associated with patients having total times to discharge greater than the average or median total time to discharge.

Appeal Br. 40, 44. Appellants' arguments for these claims also substantially overlap; therefore, we address these claims together. *See* Appeal Br. 17–18, 28–29.

Regarding claims 7 and 16, the Examiner determined “the steps of identifying an average or median total time and excluding sedation dosages and index values are mathematical steps. Thus, the instant claim[s] [are] drawn to a judicial exception.” Answer 8, 13. We also note, as discussed above, that the Examiner determined regarding the independent claims that such steps “may also be seen as a mental step.” *See, e.g., id.* at 4–5. The Examiner also determined, “[f]urthermore, as an ordered combination with the parent claim[s], the instant claim[s] [are] still well-known, conventional and routine, because gathering data, performing an algorithm, and outputting the results of an algorithm is well-known, conventional, and routine. Thus, the instant claim[s] [are] not patent eligible.” *Id.* at 8, 13. We discern no error in the Examiner’s determinations.

Under the *Mayo/Alice* Step 1, USPTO Prong 1 analysis, neither of dependent claims 7 and 16 adds any further limitation to the subject matter of independent claims 1, 10, and 18 (or dependent claims 6 and 15) that is not also directed to the abstract idea, discussed above. These dependent claims identify what data is excluded from consideration for models based on identifying (or calculating) average or median time to discharge. Under the broadest reasonable interpretation, these limitations recite data selection for models (and, potentially, more math). Such a recitation of data does not alter the fact that the claims recite a mental process and mathematical formula.

Under the *Mayo/Alice* Step 1, USPTO Prong 2 analysis, these claims do not integrate the abstract idea into a practical application. Looking to what else the claims require other than the limitations directed to an abstract

idea what we find are limitations relating to identifying what data is excluded from consideration for models based on identifying (or calculating) average or median time to discharge. Mere data gathering, such as obtaining certain information or basing a calculation on certain information, is insignificant extra-solution activity, not a practical application. *See, e.g.*, MPEP 2106.05(g); *CyberSource*, 654 F.3d at 1375; *Mayo*, 566 U.S. at 79. Tying a claimed abstract idea to a specific technical field or certain data gathering, without more, as we see in Appellants' claims here, is not a practical implementation of the abstract idea. *See, e.g.*, *Parker*, 437 U.S. at 588–90; *CyberSource*, 654 F.3d at 1370 (citing *In re Grams*, 888 F.2d at 840; *In re Meyer*, 688 F.2d at 794); *see also* MPEP § 2106.05(h).

Under the *Mayo/Alice* Step 2, we analyze these claims to identify whether an additional element or combination of elements are recited that are more than well-understood, routine, and conventional activity in the field, and indicative of an inventive concept. In agreement with the Examiner's determinations, we conclude there are no such additional elements or combinations of elements recited. Considering the limitations directed to identifying the result of math and conditionally excluding data from consideration, this amounts to “gathering data, performing an algorithm, and outputting the results of an algorithm [and] is well-known, conventional, and routine,” as determined by the Examiner. *See, e.g.*, Answer 8, 13.

Appellants present identical arguments for claims 7 and 16 as presented for the other dependent claims, as discussed above. *See* Appeal Br. 18, 28–29. These arguments are also unpersuasive regarding the

rejection of claims 7 and 16. For the above reasons, we are unpersuaded that the Examiner erred in determining claims 7 and 16 to be patent-ineligible.

VII. DEPENDENT CLAIMS 8 AND 17

Appellants separately argued claims 8 and 17, which respectively depend from claims 6 (and 1) and 15 (and 10). The limitations of claims 8 and 17 are substantially identical; claim 8 recites:

. . . wherein analyzing the remaining portion of the information comprises:

identifying an average index value in the remaining portion of the information;

dividing the sedation dosages in the remaining portion of the information into multiple groups based on the average index value and a standard deviation of the average index value;

for each group, calculating an average sedation dosage;

plotting the average sedation dosages of the groups against the index values; and

fitting a curve to the plotted average sedation dosages.

Appeal Br. 40, 43. Appellants' arguments for these claims also substantially overlap; therefore, we address these claims together. *See* Appeal Br. 18–19, 29–30.

Regarding claims 8 and 17, the Examiner determined “the steps of identifying an average, deriving a sedation dosage, calculating an average, plotting the averages against an index value, and fitting a curve are mathematical steps. Thus, the instant claim[s] [are] drawn to a judicial exception.” Answer 8, 13–14. We also note, as discussed above, that the Examiner determined regarding the independent claims that such steps “may also be seen as a mental step.” *See, e.g., id.* at 4–5. The Examiner also

determined, “[f]urthermore, as an ordered combination with the parent claim[s], the instant claim[s] [are] still well-known, conventional and routine, because gathering data, performing an algorithm, and outputting the results of an algorithm is well-known, conventional, and routine. Thus, the instant claim[s] [are] not patent eligible.” *Id.* at 9, 13–14. We discern no error in the Examiner’s determinations.

Under the *Mayo/Alice* Step 1, USPTO Prong 1 analysis, neither of dependent claims 8 and 17 adds any further limitation to the subject matter of independent claims 1, 10, and 18 (or dependent claims 6 and 15) that is not also directed to the abstract idea, discussed above. These dependent claims recite analysis steps of identifying an average index value (a mental step and also, possibly, math), dividing data into groups, calculating averages for these groups of data (math), plotting data, and fitting a curve to the plotted data. Under the broadest reasonable interpretation, these limitations recite data selection for models (and, potentially, more math). Such a recitation of data does not alter the fact that the claims recite a mental process and mathematical formula.

Under the *Mayo/Alice* Step 1, USPTO Prong 2 analysis, these claims do not integrate the abstract idea into a practical application. Looking to what else the claims require other than the limitations directed to an abstract idea what we find are limitations relating to analysis steps of identifying an average index value (a mental step and also, possibly, math), dividing data into groups, calculating averages for these groups of data, plotting data, and fitting a curve to the plotted data. Mere data gathering, such as obtaining certain information or basing a calculation on certain information, is

insignificant extra-solution activity, not a practical application. *See, e.g.*, MPEP 2106.05(g); *CyberSource*, 654 F.3d at 1375; *Mayo*, 566 U.S. at 79. Tying a claimed abstract idea to a specific technical field or certain data gathering, without more, as we see in Appellants' claims here, is not a practical implementation of the abstract idea. *See, e.g.*, *Parker*, 437 U.S. at 588–90; *CyberSource*, 654 F.3d at 1370 (citing *In re Grams*, 888 F.2d at 840; *In re Meyer*, 688 F.2d at 794); *see also* MPEP § 2106.05(h).

Under the *Mayo/Alice* Step 2, we analyze these claims to identify whether an additional element or combination of elements are recited that are more than well-understood, routine, and conventional activity in the field, and indicative of an inventive concept. In agreement with the Examiner's determinations, we conclude there are no such additional elements or combinations of elements recited. Considering the limitations directed to identifying the result of math and conditionally excluding data from consideration, this amounts to “gathering data, performing an algorithm, and outputting the results of an algorithm [and] is well-known, conventional, and routine,” as determined by the Examiner. *See, e.g.*, Answer 8, 13.

Appellants present identical arguments for claims 8 and 17 as presented for the other dependent claims, as discussed above. *See* Appeal Br. 18–19, 29–30. These arguments are also unpersuasive regarding the rejection of claims 8 and 17. For the above reasons, we are unpersuaded that the Examiner erred in determining claims 8 and 17 to be patent-ineligible.

VIII. DEPENDENT CLAIM 9

Appellants separately argue dependent claim 9, which depends from claim 6 (and 1). Claim 9 recites:

The method of claim 6, further comprising:

receiving additional information comprising additional sedation dosages and index values; and

at least one of: refining at least one of the models and generating at least one new model using the additional information.

Appeal Br. 40.

Regarding claim 9, the Examiner determined “the steps of refining a model by generating a new model is a mathematical step.” Answer 9. We also note, as discussed above, that the Examiner determined regarding the independent claims that such steps “may also be seen as a mental step.” *See, e.g., id.* at 4–5. The Examiner also determined:

receiving information is a well-known, conventional, and routine data gathering step. Thus, the instant claim is drawn to a judicial exception without significantly more. Furthermore, as an ordered combination with the parent claim, the instant claim is still well-known, conventional and routine, because gathering data, performing an algorithm, and outputting the results of an algorithm is well-known, conventional, and routine. Thus, the instant claim is not patent eligible.

Id. at 9. We discern no error in the Examiner’s determinations.

Under the *Mayo/Alice* Step 1, USPTO Prong 1 analysis, dependent claim 9 does not add any further limitation to the subject matter of independent claims 1 that is not also directed to the abstract idea, discussed above. This dependent claim recites receiving more, similar data and performing the method of independent claim 1 again or refining the result.

Under the broadest reasonable interpretation, these limitations recite data selection for models (and, potentially, more math). Such a recitation of data does not alter the fact that the claims recite a mental process and mathematical formula.

Under the *Mayo/Alice* Step 1, USPTO Prong 2 analysis, these claims do not integrate the abstract idea into a practical application. Looking to what else the claims require other than the limitations directed to an abstract idea what we find are limitations relating to analysis steps of receiving data and refining or re-doing the data analysis. Mere data gathering, such as obtaining certain information or basing a calculation on certain information, is insignificant extra-solution activity, not a practical application. *See, e.g.*, MPEP 2106.05(g); *CyberSource*, 654 F.3d at 1375; *Mayo*, 566 U.S. at 79. Tying a claimed abstract idea to a specific technical field or certain data gathering, without more, as we see in Appellants' claims here, is not a practical implementation of the abstract idea. *See, e.g.*, *Parker*, 437 U.S. at 588–90; *CyberSource*, 654 F.3d at 1370 (citing *In re Grams*, 888 F.2d at 840; *In re Meyer*, 688 F.2d at 794); *see also* MPEP § 2106.05(h).

Under the *Mayo/Alice* Step 2, we analyze these claims to identify whether an additional element or combination of elements are recited that are more than well-understood, routine, and conventional activity in the field, and indicative of an inventive concept. In agreement with the Examiner's determinations, we conclude there are no such additional elements or combinations of elements recited. Considering the limitations directed to receiving more data and refining or generating models, this amounts to “gathering data, performing an algorithm, and outputting the

results of an algorithm [and] is well-known, conventional, and routine,” as determined by the Examiner. *See, e.g.*, Answer 9.

Appellants present identical arguments for claim 9 as presented for the other dependent claims, as discussed above. *See* Appeal Br. 19–20. These arguments are also unpersuasive regarding the rejection of claims 9. For the above reasons, we are unpersuaded that the Examiner erred in determining claim 9 to be patent-ineligible.

SUMMARY

The rejection of the claims as directed to patent-ineligible subject matter is affirmed.

TIME PERIOD FOR RESPONSE

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).

AFFIRMED