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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PAWEL GOCEK, PIOTR KANIA, MICHAL PALUCH, and
TOMASZ STOPA

Appeal 2018-007779
Application 14/303,802
Technology Center 2100

Before JAMES R. HUGHES, LARRY J. HUME, and
JASON M. REPKO, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge*,
JAMES R. HUGHES.

Opinion dissenting-in-part filed by *Administrative Patent Judge*,
JASON M. REPKO

HUGHES, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the
Examiner's decision rejecting claims 13, 16, 17, 21, 28, 35–39, 42, and 43.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as International Business Machines Corp. *See* Appeal Br. 2.

Claims 1–12, 14, 15, 18–20, 22–27, 29–34, 40, and 41 have been canceled.²
See Final Act. 1–3.³ We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

CLAIMED SUBJECT MATTER

The invention relates generally “to software bundling, and more specifically, to managing software bundling using an artificial neural network.” Spec. ¶ 1; *see* Spec. ¶¶ 3, 48–49; Abstract. Claims 13 and 17 are independent. Claim 13, reproduced below, is illustrative of the claimed subject matter:

13. A system comprising:
 - an artificial neural network having an at least one input neuron and an at least one output neuron; and
 - one or more computer processor circuits that are configured to host a bundling application that is configured to:
 - identify a software component having a first value for a first identification attribute and a second value for a second identification attribute;
 - generate an input vector derived from the first value and the second value;

² Claims 33, 34, 40, and 41 were canceled in an Amendment dated Nov. 14, 2017. *See* Adv. Act. 2 (mailed Feb. 2, 2018). The Examiner includes canceled claims 33, 34, 40, and 41 in the listing of the pending claims because the Amendment was filed after the Final Office Action. *See* Final Act. 1–3.

³ We refer to Appellant’s Specification (“Spec.”), filed June 13, 2014; Appeal Brief (“Appeal Br.”), filed Jan. 11, 2018; and Reply Brief (“Reply Br.”), filed July 25, 2018. We also refer to the Examiner’s Final Office Action (“Final Act.”), mailed Aug. 22, 2017; and Answer (“Ans.”) mailed June 5, 2018.

load the input vector into the at least one input neuron of the artificial neural network;

obtain a yielded output vector from the at least one output neuron of the artificial neural network, wherein the yielded output vector corresponds to a software bundle of a plurality of software bundles; and

determine, based on the yielded output vector, that the software component is associated with the software bundle, wherein the association between the software component and the software bundle exists but is unknown prior to the obtaining the yielded output vector from the at least one output neuron of the artificial neural network, and wherein the association comprises a relationship between the software component and the software bundle such that the software component is licensed with other software components as part of the software bundle both prior to and subsequent to the obtaining the yielded output vector.

REFERENCES

The prior art relied upon by the Examiner as evidence is:

Name	Reference	Date
Kephart et al. (“Kephart”)	US 5,675,711	Oct. 7, 1997
Moore	US 7,412,430 B1	Aug. 12, 2008
Dudek et al. (“Dudek”)	US 2013/0055202 A1	Feb. 28, 2013
Simard et al. (“Simard”)	US 2015/0019204 A1	Jan. 15, 2015 (filed Nov. 8, 2013)

REJECTIONS^{4, 5}

1. The Examiner rejects claims 13, 16, 17, 21, 28, 35–39, 42, and 43 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. *See* Final Act. 7–8.

2. The Examiner rejects claims 35 and 42 under 35 U.S.C. § 112(a), as failing to comply with the written description requirement. *See* Final Act. 9–11.⁶

3. The Examiner rejects claims 13, 16, 17, 21, 28, and 37–39 under 35 U.S.C. § 103 as being unpatentable over Kephart and Dudek. *See* Final Act. 13–24.

4. The Examiner rejects claims 35 and 42 under 35 U.S.C. § 103 as being unpatentable over Kephart, Dudek, and Moore.⁷ *See* Final Act. 25–29.

5. The Examiner rejects claims 36 and 43 under 35 U.S.C. § 103 as being unpatentable over Kephart, Dudek, and Simard. *See* Final Act. 29–30.

⁴ *See* Footnote 2 (*supra*). Claims 33, 34, 40, and 41 were canceled after mailing of the Final Office Action. The Examiner includes canceled claims 33, 34, 40, and 41 in the claim rejections. We correct this harmless error in the listing of the rejected claims for clarity.

⁵ The Examiner withdrew the double patenting rejection of claims 13, 16, 17, 21, 28, and 33–43, as well as the written description rejection of claims 36 and 43. *See* Ans. 3. We do not address Appellant’s arguments with respect to the withdrawn rejections. *See* Appeal Br. 7, 16.

⁶ *See* Footnote 5 (*supra*). The Examiner includes claims 36 and 43 in the rejection. *See* Final Act. 9–11. We correct the listing of the rejected claims for clarity.

⁷ The Examiner omits the Dudek reference from the statement of the rejection. We correct this harmless error for clarity.

RELATED APPEAL

Appellant indicates that an Appeal was filed for a related patent application, U.S. Patent Application No. 14/468,623 (“’623 Appl.”). *See* Appeal Br. 3. The Notice of Appeal for the ’623 Appl. was filed on November 14, 2017 and the ’623 Appl. is also the subject of an Appeal to the Board. That appeal has been assigned Appeal No. 2018-006351. The Board rendered a decision in Appeal No. 2018-006351 (“Decision”), which was mailed on Aug. 15, 2019. In that Decision, the Board affirmed (with a Dissenting Opinion) the Examiner’s 35 U.S.C. § 101 rejection of claims 1, 2, 7, 10, 12, 13, 20, and 21. The Board also affirmed the Examiner’s obviousness rejections of claims 1, 2, 7, 10, 12, 13, 20, and 21, and reversed the Examiner’s written description rejection of claim 20. The scope of the claims in the instant application are substantially similar to the at-issue claims in the ’623 Application.

OPINION

Subject Matter Eligibility—35 U.S.C. § 101

Under 35 U.S.C. § 101, a patent may be obtained for “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” The Supreme Court has “long held that this provision contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (quoting *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)).

The Supreme Court, in *Alice*, reiterated the two-step framework previously set forth in *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*,

566 U.S. 66, 77–80 (2012), “for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice*, 573 U.S. at 217. The framework requires us first to consider “whether the claims at issue are directed to one of those patent-ineligible concepts.” *Alice*, 573 U.S. at 217. If so, we then examine “the elements of [the] 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.” *Alice*, 573 U.S. at 217 (quoting *Mayo*, 566 U.S. at 78, 79). That is, we examine the claim for an “inventive concept,” “an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Alice*, 573 U.S. at 217–18 (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73).

The Patent Office recently published revised guidance concerning this framework and the application of § 101. USPTO’s 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (hereinafter “2019 Revised Guidance”). Under that guidance, we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, mental processes, or certain methods of organizing human activity such as a fundamental economic practice or managing personal behavior or relationships or interactions between people) (hereinafter “Step 2A, prong 1”); and

(2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)) (hereinafter “Step 2A, prong 2”).⁸

See 2019 Revised Guidance, 84 Fed. Reg. at 51–52, 55.

A claim that integrates a judicial exception into a practical application applies, relies on, or uses 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. *See* 2019 Revised Guidance, 84 Fed. Reg. at 54. When the judicial exception is so integrated, then the claim is not directed to a judicial exception and is patent eligible under 35 U.S.C. § 101. *See* 2019 Revised Guidance, 84 Fed. Reg. at 54.

Only if a claim: (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then evaluate whether the claim provides an inventive concept. *See* 2019 Revised Guidance 84 Fed. Reg. at 56; *Alice*, 573 U.S. at 217–18.

For example, we look 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.⁹

⁸ All references to the MPEP are to the Ninth Edition, Revision 08-2017 (rev. Jan. 2018).

⁹ Items (3) and (4) are collectively referred to as “Step 2B” hereinafter and in the 2019 Revised Guidance.

See 2019 Revised Guidance, 84 Fed. Reg. at 56. With these principles in mind, we turn to the merits of the § 101 rejection. The Examiner rejects Appellant’s claims 13, 16, 17, 21, 28, 35–39, 42, and 43 as being directed to patent-ineligible subject matter. *See* Final Act. 7–8; Ans. 4–12. Appellant does not separately argue the claims with specificity and, instead, argues claims 13, 16, 17, 21, 28, 35–39, 42, and 43 together for this rejection. *See* Appeal Br. 7–13. Accordingly, we address the Examiner’s rejection of independent claim 13 and the claims not separately argued by Appellant as a group based on claim 13, as permitted by 37 C.F.R. § 41.37(c)(1)(iv).

Statutory Subject Matter

We find that claim 13 recites a “system” (*infra*). Appellant’s “system” uses an artificial neural network and one or more computer processors to implement a number of functions. *See* claim 13 (Appeal Br. 22 (Claim App.)). Accordingly, we analyze Appellant’s system as a process, which is a statutory category of invention (subject matter) (USPTO’s Step 1).

Abstract Idea

The Examiner rejects Appellant’s claim 13 as being directed to patent-ineligible subject matter. *See* Final Act. 7–8; Ans. 4–10. Specifically, the Examiner concludes claim 13 “is directed to a judicial exception (i.e., . . . an abstract idea) without . . . ‘significantly more.’” Final Act. 7; *see* Ans. 8–9. More specifically, the Examiner rejects Appellant’s claim 1 as reciting “organizing software entities through mathematical functional correlations of extracted attribute information” similar to *Electric Power Group (Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016)) and *Digitech (Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d

1344 (Fed. Cir. 2014)) that are “mental processes which could be accomplished by a human with pencil and paper which are identified as abstract ideas by the courts” similar to *CyberSource (CyberSource Corp. v. Retail Decisions, Inc., 654 F.3d 1366, 1375 (Fed. Cir. 2011))*. Final Act. 7; *see* Ans. 5–10.

Appellant contends the Examiner erred in rejecting the claims as being directed to patent-ineligible subject matter. *See* Appeal Br. 7–13; Reply Br. 2–12. Specifically, Appellant contends, with respect to the first step of the *Alice* analysis, that “the Examiner has failed to establish even a *prima facie* case of unpatentability” because “the Examiner has not provided any detailed, reasoned basis for explaining how these identified abstract ideas are applicable to the limitations of claim[] 13.” Appeal Br. 8–9. Appellant also contends claim 13 (and the other pending claims) is “not directed to an abstract idea,” but instead is “directed to technical solutions to technical problems related to software bundling and artificial neural networks” (Appeal Br. 10), and because a neural network is not a mental process. *See* Appeal Br. 10–12; Reply Br. 3–4. Appellant further contends that the Examiner, in the Answer, presented new arguments that mischaracterize claim 13 (and the other pending claims), and cited inapposite precedent in support of the Examiner’s ineligibility determination. *See* Reply Br. 2–12.

For the reasons discussed below, we conclude Appellant’s claim 13 (and the other pending claims) recites abstract ideas, these abstract ideas are not integrated into a practical application, nor do they include an inventive concept. In view of the 2019 Revised Guidance, we clarify and expand the Examiner’s reasoning as follows.

We begin our analysis by broadly but reasonably construing Appellant’s claim 13 (*see* Appeal Br. 22 (Claims App.)). Claim 13 recites “[a] system” including “an artificial neural network” and “one or more computer processor circuits” where the processor circuits are “configured to host a bundling application” that in turn “is configured to” perform particular functions. In other words, Claim 13 recites a system including an artificial neural network (“ANN”) and a processor executing an application to perform a software bundling process (*see* Spec. ¶¶ 1, 3, 16, 48–49) (*see also*, discussion of statutory subject matter (*supra*)). We note that a neural network is a computer system or set of algorithms within a computer system designed to function similar to a brain. *See* “neural network (NN).” Hargrave’s Communications Dictionary, Wiley, 1st ed. (2001) available at https://search.credoreference.com/content/entry/hargravecomms/neural_network_nn/0 (last accessed 24 October 2019). This is consistent with Applicant’s description of the ANN:

[A]n artificial neural network may refer to a statistical model incorporating numerical parameters that are adjusted through a learning algorithm, such that the model is capable of approximating functions of its input values. In some embodiments, an artificial neural network may be a computational tool that is capable of deriving functions based on patterns found in learned examples derived from training data loaded into the neural network.

Spec. ¶ 25.

The bundling application (of claim 13) is configured to (i.e., the software bundling process includes a (step, sub-process, or) function to) “identify a software component” where the software component has “a first value for a first identification attribute and a second value for a second

identification attribute.” That is, identifying software (a software component of a software bundle) that has two attributes (a first identification attribute and a second identification attribute)—i.e., utilizing attributes (metadata) to identify software. *See* Spec. ¶¶ 28, 48, 49; Fig. 6. Hereinafter we refer to this step as “Step A.”

Claim 13 also recites a software bundling process function to “generate an input vector derived from the first value and the second value.” In other words, generating a data structure or data representation that is an alphanumeric string (an input vector) from the identification attribute values (first and second values). *See* Spec. ¶¶ 32, 48, 49; Fig. 5. Hereinafter we refer to this step as “Step B.”

Claim 13 further recites a software bundling process function to “load the input vector into the at least one input neuron of the artificial neural network.” That is, the process includes entering (loading) the input vector into a node (neuron) of the ANN. *See* Spec. ¶¶ 32, 36, 44, 48, 49; Fig. 5. Hereinafter we refer to this step as “Step C.”

Claim 13 additionally recites a software bundling process function to “obtain a yielded output vector from the at least one output neuron of the artificial neural network, wherein the yielded output vector corresponds to a software bundle of a plurality of software bundles.” In other words, reading (obtaining) an output vector (a data representation that is an alphanumeric string) from a node (neuron) of the ANN where the output vector corresponds to a software bundle. *See* Spec. ¶¶ 44, 46, 48, 49; Figs. 5, 6. Hereinafter we refer to this step as “Step D.”

Claim 13 continues, by reciting a software bundling process function to “determine, based on the yielded output vector, that the software

component is associated with the software bundle,” where “the association” (between the software component and the software bundle) “exists but is unknown prior to the obtaining the yielded output vector . . . and . . . comprises a relationship between the software component and the software bundle such that the software component is licensed with other software components as part of the software bundle.” That is, making a determination (determining), based on the output vector, that a software component is associated with a software bundle. Claim 13 also characterizes the purpose of determining the association between the software component and the software bundle—to identify a relationship between the software component (identified in Step A) and another licensed software component that is part of a software bundle. Hereinafter we refer to this step as “Step E.”

In summary, claim 13 recites a system including an ANN and a processor executing an application to perform a process for managing bundled software (licenses) to identify software components, generate an input vector, input the vector into a neural network, produce an output vector and associate the software component with a software bundle. Hereinafter, we refer to this process as the “bundled software management process.” This is consistent with how Appellant describes the claimed invention—claim 13 is “directed to . . . software bundling and artificial neural networks.” Appeal Br. 10; *see also* Abstract; Spec. ¶ 1.

Appellant’s contentions (*supra*) focus on the Examiner’s purported failure to present a prima facie case (*see, e.g.*, Appeal Br. 8–9). Here, in rejecting the claims (in particular claim 13) under 35 U.S.C. § 101, the Examiner analyzed the claims using the *Mayo/Alice* two-step framework,

consistent with the guidance set forth in the USPTO’s “2014 Interim Guidance on Patent Subject Matter Eligibility,” 79 Fed. Reg. 74618 (Dec. 16, 2014), in effect at the time the rejection was made on August 22, 2017. The Examiner notified Appellant of the reasons for the rejection “together with such information and references as may be useful in judging of the propriety of continuing the prosecution of . . . [the] application.” 35 U.S.C. § 132. *See* Final Act. 7–8. Contrary to Appellant’s assertions, in doing so, the Examiner set forth a prima facie case of unpatentability such that the burden of production shifted to Appellant to demonstrate that the claims are patent eligible.

Appellant also contends (*supra*) the at-issue claims are not abstract because the claims require “the use of artificial neural networks performing technical operations related to software bundling” (Appeal Br. 10). *See* Appeal Br. 10–12; Reply Br. 3–4. Claim 13, however, recites no substantive limitations on how the bundled software management process generates or derives vectors (the input vector and output vector), or how the association between the software component and the software bundle is determined (based on the output vector). The limitations are entirely functional in nature, or characterize various data (structures and values) utilized in Steps A–E—for example, claim 13 recites (the function) “obtain” an “output vector” that “corresponds to a software bundle” and “determine, based on the . . . output vector, that the software component is associated with the software bundle” where “the software component is licensed with other software components as part of the software bundle.”

Although Appellant contends the claims describe purported technological improvements or advances provided by the recited bundled

software management process utilizing an artificial neural network, claim 13 (and the other pending claims) does not explicitly recite the ANN performing any processing, analysis, or calculations. The entity performing the functions (“identify” (in Step A), “generate” (in Step B), “load” (in Step C), “obtain” (in Step D), and “determine” (in Step E)) is the bundling application, which is executed by the processor (configured to perform the functions). Claim 13, instead, simply recites that a “yielded output vector” is obtained from a neuron (node) of the ANN. Although obtaining an output (from the ANN) implies utilizing the ANN to perform data analysis or calculations and output a data structure (an output vector), how the output vector is “yielded,” that is, how the output vector is calculated utilizing the ANN, is not specified.

A person can practically perform the function of limitations A, B, C, D, and E (delineated above) mentally, or by using pen and paper. *See, e.g.*, Appellant’s Fig. 7. Nowhere does Appellant point to specific claim limitations that distinguish over a human process. To the extent Appellant argues utilizing an ANN to perform a function—determine associations with licensed software bundles—represents specific technological improvements, we disagree. *See, e.g.*, Appeal Br. 11 (“the claimed invention actually improves computer functionality through inventive techniques that utilize artificial neural networks in a novel and non-obvious manner for improved software bundling.”). Claim 13 does not specifically recite the ANN performing any function. Claim 13 simply recites “obtain[ing] a yielded output vector from an at least one output neuron of the artificial neural network,” which implies the ANN outputting a calculation—the “yielded output vector.” The ANN is not recited in the association determination.

Claims reciting performing information analysis, and the collection and exchange (outputting) of information related to such analysis, have been determined by our reviewing court to be an abstract concept that is not patent eligible. *See SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1165, 1167–68 (Fed. Cir. 2018) (Claims reciting “[a] method for providing statistical analysis” (*id.* at 1165), were determined to be “directed to an abstract idea” (*id.* at 1168). “As many cases make clear, even 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” (*id.* at 1168 (citation and quotation marks omitted)). *See also Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017) (identifying the abstract idea of collecting, displaying, and manipulating data); *Elec. Power Grp.*, 830 F.3d at 1354 (characterizing collecting information, analyzing information by steps people go through in their minds, or by mathematical algorithms, and presenting the results of collecting and analyzing information, without more, as matters within the realm of abstract ideas); *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343, 1345, 1347 (Fed. Cir. 2014) (finding the “claims generally recite . . . extracting data . . . [and] recognizing specific information from the extracted data” and that the “claims are drawn to the basic concept of data recognition”); *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can. (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (“[T]he fact that the required calculations could be performed more efficiently via a computer does not materially alter the patent eligibility of the claimed subject matter.”). Indeed, even if the analysis requires one to access and gather data from a database or utilize a

pen and paper in the analysis (such as to graphically represent a data set), such analysis may still be an abstract mental process. *See CyberSource*, 654 F.3d at 1372 (“[E]ven if some physical steps are required to obtain information from the database . . . such data-gathering steps cannot alone confer patentability.” A claim focused on verifying credit card transaction information is directed to “unpatentable mental processes” because the claim’s steps “can be performed in the human mind, or by a human using a pen and paper.”).

In summary, we conclude Appellant’s claim 13 recites a judicial exception (USPTO’s Step 2A, Prong 1; *see* 2019 Revised Guidance). Specifically, claim 13 recites a process for managing software bundling using an artificial neural network—the bundled software management process—for associating software (software components) with other software (bundled, licensed software) by identifying software components, generating an input vector, inputting the vector into a neural network, using an artificial neural network to produce (yield) an output vector and determining an association between the software component(s) and bundled software as discussed *supra*. The bundled software management process consists of mental processes that can be practically performed in the human mind (or utilizing pen and paper) including observation, evaluation, or judgment. *See* 2019 Revised Guidance, 84 Fed. Reg. at 52, 53 (listing “[m]ental processes—concepts performed in the human mind (including an observation, evaluation, judgment, opinion)” as one of the “enumerated groupings of abstract ideas” (footnote omitted)). The revised guidance explains that “mental processes” include acts that people can perform in their minds or using pen and paper, even if the claim recites that a generic

computer component performs the acts. *See* 2019 Revised Guidance, 84 Fed. Reg. at 52 n.14 (“If a claim, under its broadest reasonable interpretation, covers performance in the mind but for the recitation of generic computer components, then it is still in the mental processes category unless the claim cannot practically be performed in the mind.” (emphasis omitted)). Because each of the limitations discussed above encompasses an act that people can perform in their minds or using pen and paper, claim 1 recites mental processes. Appellant’s arguments have not persuaded us otherwise.

Practical Application

We next consider whether claim 13 integrates the abstract idea into a practical application (USPTO’s Step 2A, Prong 2). *See* Revised Guidance, 84 Fed. Reg. at 51. In doing so, we consider whether there are any additional elements beyond the abstract idea that, individually or in combination, “integrate the [abstract idea] into a practical application, using one or more of the considerations laid out by the Supreme Court and the Federal Circuit.” Revised Guidance, 84 Fed. Reg. at 54–55.

Appellant’s claim 13 recites additional elements beyond the abstract bundled software management process (the judicial exception) (*supra*). The additional elements in claim 13 include the recited “artificial neural network” (“ANN”) and “one or more computer processor circuits” (the processor) that executes the “bundling application” “configured to” perform the bundled software management process. Appeal Br. 22 (Claims App). The written description, or lack thereof, indicates that each of these elements encompass commonplace generic components. Appellant’s Specification does not even mention computer processor circuits or a processor, and does

not describe a “computer” or the “artificial neural network” with any specificity. For example, Appellant’s Specification describes “computers” as “any relevant computer system or combination of computer systems including, for example, servers, desktops, laptops, mobile phones, smart phones, tablets, personal or enterprise digital assistants, and the like.” Spec. ¶ 21. Also, Appellant’s Specification describes the “artificial neural network” as a “statistical model incorporating numerical parameters” or a “computational tool that is capable of deriving functions based on patterns” where a user “may obtain software bundling information about an unbundled software component (e.g., a newly discovered software component for which a bundle association is unknown . . .) by using an artificial neural network.” Spec. ¶ 25. Further, the Specification explains that “[i]t is contemplated that a wide variety of different types of artificial neural networks could be suitable for use in some embodiments of the present invention.” Spec. ¶ 26. In summary, Appellant’s written description does not portray computers or the ANN operating in a new way. Instead the written description depicts these components as generic components operating in their accustomed manner.

Other than disclosing that these additional elements performing their accustomed functions utilizing standard techniques, the written description describes these components in functional, result-oriented terms with no technical details. *See, e.g.*, Spec. ¶¶ 21, 25–26, 48–49 (describing the ANN with respect to the bundled software management process). These descriptions show that additional elements are generic. *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986) (“[A] patent need not teach, and preferably omits, what is well known in the art.”);

Intellectual Ventures I LLC v. Erie Indem. Co., 850 F.3d 1315, 1331 (Fed. Cir. 2017) (“The claimed mobile interface is so lacking in implementation details that it amounts to merely a generic component (software, hardware, or firmware) that permits the performance of the abstract idea, i.e., to retrieve the user-specific resources.”).

Appellant contends claim 13 (as well as independent claim 17) provides “technical solutions to technical problems related to software bundling and artificial neural networks” (Appeal Br. 10) and constitutes an “improve[ment to] computer functionality” (i.e., computer-related technology) (Appeal Br. 11) and the “claimed invention is not a generic use of a generic computer as a tool. Rather the claimed invention actually improves computer functionality through inventive techniques that utilize artificial neural networks in a novel and non-obvious manner for improved software bundling” (Appeal Br. 11)—similar to *DDR Holdings (DDR Holdings, LLC v. Hotels.com, L.P.)*, 773 F.3d 1245 (Fed. Cir. 2014)). See Appeal Br. 10–12; Reply Br. 2–12. Appellant additionally contends “Appellant’s claims are actually quite similar to those found eligible in *McRO* and *Enfish*” (Reply Br. 5 (citing *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016) and *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016))) in that the claim provides “a specific set of rules to improve a computer-implemented process” (similar to *McRO*) (Reply Br. 6). See Reply Br. 4–9. In other words, Appellant contends the claims recite a technological improvement that amounts to more than simply utilizing a computer as a tool to accomplish the bundled software management process.

Appellant’s contentions correspond to the reasoning in MPEP §§ 2106.05(a)–(c), where additional elements integrate the judicial exception into a practical application. We, however, disagree with Appellant’s contentions. Appellant’s additional elements, in particular the ANN, do not apply or use the bundled software management process (the judicial exception) in a manner that imposes a meaningful limit on the judicial exception, such that it is more than a drafting effort designed to monopolize the exception. *See Alice*, 573 U.S. at 221–24 (citing *Mayo*, 566 U.S. at 78–85). Rather, Appellant’s claim recites generic computer elements (the processor and the ANN) that are utilized as tools to carry out the functions recited in the bundled software management process—identifying software components, generating an input vector and inputting the vector into a neural network, producing an output vector, and associating the software component with a software bundle, as well as carrying out the implicit calculation of the output vector (the “yielded output vector”) which is used to determine an association with bundled software (the abstract idea). Utilizing computers as tools to perform common data processing functions (and to perform an implicit calculation) that can be mental processes (an abstract idea) does not impose a meaningful limit on the abstract idea. *See* MPEP § 2106.05(f); *see also Alice*, 573 U.S. at 223 (finding “if [the] recitation of a computer amounts to a mere instruction to implement an abstract idea on a computer that addition cannot impart patent eligibility” (quotations and internal citations omitted)).

Appellant’s claim 13 (and the other pending claims) can be distinguished from patent eligible claims such as those in *McRO*, *Enfish*, *BASCOM*, and *DDR Holdings* that are directed to “a specific means or

method that improves the relevant technology” (*McRO*, 837 F.3d at 1314), or “a specific improvement to the way computers operate” (*Enfish*, 822 F.3d at 1336), solving a technology-based problem (*BASCOM Global Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1349–52 (Fed. Cir. 2016)), or a method “rooted in computer technology in order to overcome a problem specifically arising in the realm of computer [technology]” (*DDR Holdings*, 773 F.3d at 1257). Contrary to Appellant’s arguments, claim 13 is not a technological improvement or an improvement in a technology.

Appellant’s claim 13 does not “improve the functioning of the computer itself” or “any other technology or technical field.” *Alice*, 573 U.S. at 225. Nor does it provide a technological solution to a technological problem. *See DDR Holdings*, 773 F.3d at 1257; MPEP § 2106.05(a). Appellant fails to sufficiently and persuasively explain how the instant claim(s) are directed to an improvement in the way computers operate, nor has Appellant identified any technical advance or improvement or specialized computer components. *See* Appeal Br. 10–12; Reply Br. 2–12.

As discussed *supra*, nothing in claim 1, precludes a human from performing the bundled software management process. Performing such information processing functionality is the reason computers exist. The mere automation of a process that can be performed by a human is not sufficient to show an improvement in computer functionality, and the fact that a computer or an ANN may increase efficiency—be more efficient and accurate by reducing the difficulty of tracking licenses (*see* Appeal Br. 11–12; Spec. ¶ 2 (“may help to ensure license compliance and efficient resource allocation”))—does not change the abstract-idea analysis. *See Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363,

1370 (Fed. Cir. 2015) (holding that “merely adding computer functionality to increase the speed or efficiency of the process does not confer patent eligibility on an otherwise abstract idea”); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015) (“[R]elying on a computer to perform routine tasks more quickly or more accurately is insufficient to render a claim patent eligible.”); *see also FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1095 (Fed. Cir. 2016).

Even if Appellant’s claimed system including the ANN also includes an improved algorithm and processing of information by the ANN using such an improved algorithm to produce an output vector—features that are not recited in claim 13 (under our broad but reasonable interpretation)—the claim still does not specify any improvement in how the processor (computer) and the ANN perform the underlying mathematical analysis necessary to perform the algorithm. In other words, only the abstract ideas in claim 13 are potentially new (although we make no determination as to novelty or obviousness), not the way the computer and the ANN operates.

To the extent Appellant contends inputting and outputting vectors (to and from nodes of the ANN) demonstrates significant non-abstract subject matter (*see, e.g.*, Reply Br. 9–12), such activity may also be interpreted as merely extra-solution activity. *See* MPEP § 2106.05(g).

In summary, “the focus of the claims is not on such an improvement in computers as tools, but on certain independently abstract ideas that use computers as tools.” *Elec. Power Grp.*, 830 F.3d at 1354; *see also* MPEP § 2106.05(f) (emphasis omitted) (instructing Examiners to consider “[w]hether the claim invokes computers or other machinery merely as a tool to perform an existing process” in determining whether the claim recites

mere instructions to apply the exception), cited in 2019 Revised Guidance, 84 Fed. Reg. at 55, n.30. Thus, we conclude the claims are directed to an abstract idea that is not integrated into a practical application.

Inventive Concept

Having concluded Appellant's claims are directed to an abstract idea under the 2019 Revised Guidance (Step 2A analysis), we consider whether claim 13 has an inventive concept, that is, whether the claim has additional elements that “transform the nature of the claim’ into a patent-eligible application.” *Alice*, 573 U.S. at 217 (quoting *Mayo*, 566 U.S. at 78, 79). As discussed above, this requires us to evaluate whether the additional claim elements add “a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field” or “simply append[] well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality.” Revised Guidance, 84 Fed. Reg. at 56.

The Examiner determined that Appellant's claim 13 (and the other pending claims) “does not include additional elements that are sufficient to amount to significantly more than the judicial exception because the additional claim elements are simply general purpose computer systems which are recited at a high level of generality which provide general purpose functionality.” Final Act. 7; *see* Final Act. 7–8; Ans. 5–12.

Appellant, on the other hand, reiterates the limitations of claims 13 (and 17) and contends claim 13 “similar to the claims in [*BASCOM*], include nonconventional arrangements of pieces that amount to significantly more than an abstract idea” and this “unconventional arrangement . . . amounts to an inventive concept.” Appeal. Br. 13; *see* Appeal Br. 12; Reply Br. 4–12.

Appellant also contends the Examiner did not properly indicate the additional claim elements and did not provide sufficient explanation or support that the claim limitations recite well-understood, routine, or conventional activities. *See* Appeal Br. 9.¹⁰

Appellant fails to persuade us of error in the Examiner’s rejection with respect to the second *Alice* step (USPTO’s Step 2B). We agree with the Examiner that Appellant’s claim 13 (and the other pending claims) does not evince an “inventive concept” that is significantly more than the abstract idea itself. In particular, Appellant fails to explain how the additional elements (above) add specific limitations beyond the judicial exception that are not well-understood, routine, and conventional in the field.

As previously discussed, claim 13 (and the other pending claims) merely recites additional non-abstract elements (above)—specifically the “ANN” and “processor circuits” (the processor) that execute the “bundling application” to perform the bundled software management process. Appeal Br. 22 (Claims App)—generic computer elements, in particular the processor, that carry out common data processing functions recited in the bundled software management process (the abstract idea). Specifically, Appellant’s Specification describes a collection of conventional (generic) computers performing traditional computer functions—these computer

¹⁰ Appellant’s Reply Brief was filed after the publication of the *Berkheimer* decision (*Berkheimer v. HP Inc.*, 881 F.3d 1360 (Fed. Cir. 2018)) and the USPTO’s *Berkheimer* Memorandum (*Changes in Examination Procedure Pertaining to Subject Matter Eligibility, Recent Subject Matter Eligibility Decision (Berkheimer v. HP, Inc.)* (April 19, 2018) available at <https://www.uspto.gov/sites/default/files/documents/memo-berkheimer-20180419.PDF>). Appellant makes no explicit arguments with respect to *Berkheimer* and, accordingly, such arguments are waived.

components include the above-discussed processor and ANN interacting with the bundling application and a bundling database (not recited in the claim) through a network (also not recited in the claim). *See, e.g.*, Spec. ¶¶ 21, 22, 25, 26; Fig. 1. In particular, Appellant’s Specification describes the ANN as being well-known or conventional—*see, e.g.*, Spec. ¶¶ 25, 26 (“[i]t is contemplated that a wide variety of different types of artificial neural networks could be suitable for use in some embodiments of the present invention” (Spec. ¶ 26)), and Spec. ¶ 47 (“[m]any other types of artificial neural networks are contemplated with many different variations”). Also, to the extent that the written description describes the functions performed by these elements, in particular the ANN, Appellant’s Specification describes the functions at a high level of generality and largely does not describe the particulars of how the claimed invention implements these functions. *See, e.g.*, Spec. ¶¶ 48–49 (describing the functions in the validity dependent data handling process). Such conventional computer processes operating on conventional computer hardware “do not alone transform an otherwise abstract idea into patent-eligible subject matter.” *FairWarning*, 839 F.3d at 1096 (citing *DDR Holdings*, 773 F.3d at 1256); *see also Berkheimer* Memorandum at 3 (explaining that a specification that describes additional elements “in a manner that indicates that the additional elements are sufficiently well-known that the specification does not need to describe the particulars of such additional elements to satisfy 35 U.S.C. § 112(a)” can show that the elements are well-understood, routine, and conventional).

To the extent Appellant contends the Examiner failed to properly present and support the Examiner’s rejection with respect to the inventive concept analysis (*supra*), the Examiner cited to Appellant’s Specification as

well as case precedent to support the Examiner's determinations that the claims recite well-understood, routine, and conventional components and activities. *See* Ans. 4 (citing *Electric Power Group*), 7–8 (citing Spec. ¶ 47); Ans. 9–12 (citing case precedent and further explaining that the claims do not demonstrate an inventive concept).

For at least the reasons above, we are not persuaded of Examiner error in the rejection of claim 13 under 35 U.S.C. § 101. Thus, we sustain the Examiner's rejection under § 101 of independent claim 13, independent claim 17, and dependent claims 16, 21, 28, 35–39, 42, and 43, which depend from claims 13 and 17, respectively, and which were not separately argued with specificity.

Written Description Rejection—35 U.S.C. § 112(a)

The Examiner rejects claims 35 and 42 as failing to comply with the written description requirement. *See* Final Act. 8–11; Ans. 12–13. Appellant contends that the disputed features—“the input vector comprises a first dimension corresponding to the first identification attribute and a second dimension corresponding to the second identification attribute, wherein the first dimension has at least three possible values, and wherein the second dimension has at least two possible values” (claim 35 (Appeal Br. 26 (Claims App.)))—are supported by the Specification. *See* Appeal Br. 13–16 (citing Spec. ¶¶ 28, 32, 34; Figs. 3, 6); Reply Br. 12–13.

The test for sufficiency under the written description requirement “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.” *Ariad Pharms, Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010).

Appellant's cited paragraphs describe multiple possible identification attribute values (at least five different values), and multiple dimensions. *See* Spec. ¶¶ 28, 32, 34; Appeal Br. 12–15. We find the above-described subject matter from Appellant's Specification provides sufficient written description support for the claimed features the Examiner found lacking in such support. In particular, the above description shows Appellant had possession of a first dimension corresponding to a first identification attribute, a second dimension corresponding to a second identification attribute, the first dimension (identification attribute) having three possible values, and the second dimension (identification attribute) having two possible values.

We, therefore, find the Examiner erred in rejecting claims 35 and 42 as lacking sufficient written description support.

Obviousness Rejections of Claims 13, 16, 17, 21, 28, 36–39, and 43

Appellant argues independent claim 13, independent claim 17, and dependent claims 16, 21, 28, 36–39, and 43, together as a group with respect to the 35 U.S.C. § 103 rejection. *See* Appeal Br. 17–19. We select independent claim 13 as representative of Appellant's arguments with respect to claims 13, 16, 17, 21, 28, 36–39, and 43. 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner rejects claims 13, 16, 17, 21, 28, and 37–39 over Kephart and Dudek. *See* Final Act. 13–24. The Examiner also rejects claims 36 and 43 over Kephart, Dudek, and Simard. *See* Final Act. 29–30.

Appellant contends the Examiner does not provide a sufficient rationale for combining Kephart and Dudek and, therefore, the Examiner's rejection is improper. *See* Appeal Br. 17–19; Reply Br. 14–16. Specifically, Appellant contends, *inter alia*, the Examiner's rationale (the stated

motivations) is “merely conclusory arguments” (Appeal Br. 17) and the Examiner has not provided reasoning why one would combine Kephart’s virus classifier with Dudek’s method of discovering products that are licensed together (*see* Appeal Br. 18). *See* Appeal Br. 17–19; Reply Br. 14–16.

The Examiner explains that “[i]t would thus have been obvious . . . to advantageously add onto the teachings of [*Kephart*],” which “identif[ies] unknown software component[s] using [an] artificial neural network[,] with [the teachings] of *Dudek*” which describes “software components licensed with other software components in a bundle” “to select the predicative identification attributes to be used by the classifier for software bundling.” The suggestion or motivation “for doing so would have been to facilitate ‘a collection of software components that is licensed or sold together, . . . to serve a particular business need.’” Final Act. 18 (quoting Dudek ¶ 2) (emphasis omitted). As further explained by the Examiner, “Kephart teaches identifying similar software components with similar attributes characteristics via neural network classifiers.” “Dudek teaches using certain attributes as being indicative of two software components belonging to a common software product.” “The motivation [for combining Kephart and Dudek] is . . . suggested by Dudek[—]to have the software be licensed together.” Ans. 13 (citing Dudek ¶¶ 14, 21).

We agree with the Examiner that the Examiner has provided a proper rationale for combining the undisputed features of Kephart and Dudek. *See* Final Act. 18; Ans. 13. Appellant does not explain why the references are incompatible (not analogous or not in the same field of endeavor), nor does Appellant argue that the references teach away from one another or the

claimed invention. In contrast to Appellant’s arguments (*see* Appeal Br. 17; Reply Br. 14–16), the Examiner need not explain how to bodily combine the features of the prior art references—“[t]he test for obviousness is not whether the features of a secondary reference may be *bodily incorporated* into the structure of the primary reference Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (emphasis added). *See In re Mouttet*, 686 F.3d 1322, 1332–33 (Fed. Cir. 2012). Here, Appellant argues the references individually and does not address the specific arguments set out by the Examiner. The references cited by the Examiner must be read, not in isolation, but for what each fairly teaches in combination with the prior art as a whole. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (one cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references).

Also, contrary to Appellant’s arguments, this is not an instance where the rejection attempts to combine references where one of the references already solves the problem purportedly addressed by the reference—that the “software components of Dudek are already licensed together; that is the point of the software bundles described therein” (Reply Br. 15; *see* Reply Br. 14–16. Instead, as pointed out by the Examiner (*supra*), Dudek teaches attributes indicating that software components belong to a common software product. *See* Dudek ¶¶ 14, 21.

The Supreme Court has held that in analyzing an obviousness rationale, the Examiner “need not seek out precise teachings directed to the specific subject matter of the challenged claim . . . [and may] take account of

the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Also, the Examiner may consider “the background knowledge possessed by a person having ordinary skill in the art.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Further, an artisan is presumed to possess both skill and common sense. *See KSR*, 550 U.S. at 421 (“A person of ordinary skill is also a person of ordinary creativity, not an automaton.”). For the all the reasons set forth above, we find the Examiner provided a legally cognizable rationale for the combination of Kephart and Dudek, in that the Examiner “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d at 988).

We further find that it would have been within the skill of an ordinarily skilled artisan to combine Kephart’s neural network with Dudek’s teaching of associating software components together with a common software product (i.e., determining an association). *See KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”). We are not persuaded that combining the respective familiar elements of the cited references in the manner proffered by the Examiner would have been “uniquely challenging or difficult for one of ordinary skill in the art” at the time of Appellant’s invention. *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418).

Accordingly, Appellant's contentions do not persuade us of error in the Examiner's obviousness rejection of representative independent claim 13. Therefore, we affirm the Examiner's rejection of representative claim 13, independent claim 17, and dependent claims 16, 21, 28, 36–39, and 43, not separately argued with particularity (*supra*).

Obviousness Rejection of Claims 35 and 42

The Examiner rejects claims 35 and 42 over Kephart, Dudek, and Moore. *See* Final Act. 25, 27–29. Appellant contends that the Examiner does not provide a sufficient rationale for combining Kephart, Dudek, and Moore and, therefore, the Examiner's rejection is improper. *See* Appeal Br. 19–20; Reply Br. 16–18.

The Examiner explains that “[i]t would thus have been obvious . . . to advantageously add onto the teachings of [*Kephart*],” which “identif[ies] unknown software component[s] using [an] artificial neural network,” with the teachings “of *Moore*” which describes “multiple linguistic value[s] for [a] software attribute.” The suggestion or motivation “for doing so would have been to ‘help improve the accuracy.’” Final Act. 28–29 (quoting Moore's Abstract) (emphasis omitted). As further explained by the Examiner, “Kephart teaches identification attributes of vector dimensions for software identification, and Moore teaches multiple values for software attributes.” Ans. 14. “The [motivation for combining Kephart and Dudek with Moore] is . . . suggested by Moore[—]to improve the accuracy of representation.” Ans. 14 (citing Moore, Abstract).

For the same reasons as claim 13 (*supra*), we agree with the Examiner that the Examiner has provided a proper rationale for combining the undisputed features of Kephart, Dudek, and Moore. *See* Final Act. 27–29;

Ans. 14. In particular, Appellant does not explain why the references are not analogous art or are not in the same field of endeavor, nor does Appellant argue that the references teach away from one another. Further, the Examiner need not explain how to bodily combine the features of the prior art references.

We further find that it would have been within the skill of an ordinarily skilled artisan to combine Kephart's neural network with Dudek's teaching of associating software components together with a common software product and also Moore's teaching of multiple dimension values. *See KSR*, 550 U.S. at 417–18. Accordingly, Appellant's contentions do not persuade us of error in the Examiner's obviousness rejection of claims 35 and 42. Therefore, we affirm the Examiner's rejection of claims 35 and 42.

CONCLUSION

For the reasons discussed above, we determine that claims 13, 16, 17, 21, 28, 35–39, 42, and 43 are directed to an abstract idea and do not demonstrate an inventive concept. We also determine that claims 13, 16, 17, 21, 28, 35–39, 42, and 43 are obvious in view of the cited prior art. We further find claims 35 and 42 have adequate written description support.

Appellant has not shown that the Examiner erred in rejecting claims 13, 16, 17, 21, 28, 35–39, 42, and 43 under 35 U.S.C. § 101. Appellant has also not shown that the Examiner erred in rejecting claims 13, 16, 17, 21, 28, 35–39, 42, and 43 under 35 U.S.C. § 103. Appellant has shown that the Examiner erred in rejecting claims 35 and 42 under 35 U.S.C. § 112(a). We therefore sustain the Examiner's rejection of claims 13, 16, 17, 21, 28, 35–39, 42, and 43.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
13, 16, 17, 21, 28, 35–39, 42, 43	101	Patent Eligible Subject Matter	13, 16, 17, 21, 28, 35–39, 42, 43	
35, 42	112(a)	Written Description		35, 42
13, 16, 17, 21, 28, 35–39, 42, 43	103	Kephart, Dudek	13, 16, 17, 21, 28, 35–39, 42, 43	
Overall Outcome			13, 16, 17, 21, 28, 35–39, 42, 43	

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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PAWEL GOCEK, PIOTR KANIA, MICHAL PALUCH,
and TOMASZ STOPA

Appeal 2018-007779
Application 14/303,802
Technology Center 2100

Before JAMES R. HUGHES, LARRY J. HUME, and
JASON M. REPKO, *Administrative Patent Judges*.

REPKO, *Administrative Patent Judge*, Dissenting-in-Part

DISSENTING-IN-PART

I join the Majority in affirming the Examiner's decision to reject claims 13, 16, 17, 21, 28, 35–39, 42, and 43 under 35 U.S.C. § 103 and reversing the Examiner's decision to reject claims 35 and 42 under 35 U.S.C. § 112(a). But I disagree with the Majority's decision to affirm the rejection of claims 13, 16, 17, 21, 28, 35–39, 42, and 43 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter.

In particular, the claims are directed to a computer system comprising an Artificial Neural Network (ANN). I disagree with the Majority that the claims recite a patent-ineligible abstract idea under § 101.

Background

The Specification explains that tracking which software licenses govern which components is a challenge. Spec. ¶ 17. For example, an entity may be entitled to use a specific database software component for free if it is bundled with one offering. *Id.* Yet if it is bundled with another offering, the entity may have to pay for it. *Id.* There may be hundreds or thousands of possible components or bundles. *Id.* ¶ 21. In Appellants' invention, a software-asset administrator obtains software bundling information about an unbundled software component by using an ANN. *Id.* ¶ 25.

The Majority notes that “a neural network is a computer system or set of algorithms within a computer system designed to function similar to a brain.” *See* Maj. Op. 10 (citing Hargrave's Communications Dictionary, Wiley, 1st ed. (2001)). According to the Specification, an ANN uses a statistical model incorporating numerical parameters that are adjusted through a learning algorithm so the model can approximate functions of its input values. Spec. ¶ 25. The ANN can derive functions based on patterns found in the learned examples derived from training data. *Id.*

After the ANN has been trained, the invention uses it to determine bundling information for newly discovered software components. *Id.* ¶ 48. Specifically, the system scans the network for new components. *Id.* The system then generates an execution input vector with dimensions corresponding to identification attributes. *Id.* Next, the system enters the execution input vector into the ANN. *Id.* The ANN's output vector can then be converted into the name or identifier of the appropriate bundle. *Id.*

Step 2A, Prong One of the Guidance

The USPTO published revised guidance on patent subject matter eligibility. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (USPTO Jan. 7, 2019) (“Guidance”). Step 1 of the USPTO’s eligibility analysis asks whether the claimed subject matter falls within the four statutory categories of invention. *Id.* at 53–54. Under Step 2A, Prong One of the Guidance, we determine whether the claim recites a judicial exception, including particular groupings of abstract ideas. *Id.* at 52–53.

The Guidance synthesizes the key concepts identified by the courts as abstract ideas into three primary subject-matter groupings: mathematical concepts, certain methods of organizing human activity (e.g., a fundamental economic practice), and mental processes. *Id.* at 52.

Here, the Majority determines that the recited process can be “performed in the human mind (or utilizing pen and paper).” Maj. Op. 16. I respectfully disagree.

The Claims

Independent claim 13 recites,

A system comprising:

an artificial neural network having an at least one input neuron and an at least one output neuron; and

one or more computer processor circuits that are configured to host a bundling application that is configured to:

identify a software component having a first value for a first identification attribute and a second value for a second identification attribute;

generate an input vector derived from the first value and the second value;

load the input vector into the at least one input neuron of the artificial neural network;

obtain a yielded output vector from the at least one output neuron of the artificial neural network, wherein the yielded output vector corresponds to a software bundle of a plurality of software bundles; and

determine, based on the yielded output vector, that the software component is associated with the software bundle, wherein the association between the software component and the software bundle exists but is unknown prior to the obtaining the yielded output vector from the at least one output neuron of the artificial neural network, and wherein the association comprises a relationship between the software component and the software bundle such that the software component is licensed with other software components as part of the software bundle both prior to and subsequent to the obtaining the yielded output vector.

Indeed, the input to the artificial neural network (ANN) need not be complex. For instance, the recited vectors may include alphanumeric or binary strings that represent specific values for variables. Spec. ¶ 32. Each specific value may be represented in a single dimension—i.e., a specific portion in the string corresponding to a specific variable. *Id.* And, as the majority notes, a neural network is “designed to function similar to a brain.” Maj. Op. 10.

Even so, processes that cause a computer to function like a brain, such as those in the artificial-intelligence field, can be different from the mental processes that are discussed in the Guidance. For instance, “Claims do not recite a mental process when they do not contain limitations that can *practically* be performed in the human mind, for instance when the human mind is not equipped to perform the claim limitations.” October 2019 Update: Subject Matter Eligibility 1 (Oct. 17, 2019)

https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.p

df (emphasis added); *see also* USPTO, Subject Matter Eligibility Examples: Abstract Ideas 8–9 (Jan. 7, 2019), https://www.uspto.gov/sites/default/files/documents/101_examples_37to42_20190107.pdf (applying the Guidance to a method for training a neural network for facial detection in Example 39 and concluding that “the steps are not *practically* performed in the human mind”) (emphasis added).

Here, I disagree with the Majority that the claims recite a process that can be practically performed in the human mind. For instance, claim 13 recites the ANN itself and the claim requires circuits configured to interact with the ANN.¹¹ So if the recited ANN is “a computer system or set of algorithms within a computer system” as the Majority determines (Maj. Op. 10), then the recited ANN must require a computer running those algorithms. In fact, claim 13 expressly requires “computer processor circuits” and the ANN to “load the input vector into the at least one input neuron *of the artificial neural network*” and “obtain a yielded output vector from the at least one output neuron *of the artificial neural network*” (emphasis added). Because the functions require an interaction between the ANN and the circuits, the recited functions cannot practically be performed in the human mind but for some generically recited computer components. Thus, the claims do not set forth or describe an abstract mental process. *See, e.g.*, Guidance, 84 Fed. Reg. at 52 n. 15 (collecting cases).

For this reason, I respectfully dissent.

¹¹ Independent claim 17 recites similar functions.