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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DAMON LANPHEAR, RODRICK MEGRAW and DANIEL HENDRICK

Appeal 2019-001381
Application 13/646,587
Technology Center 2100

Before ST. JOHN COURTENAY III, LARRY J. HUME, and PHILLIP A. BENNETT, *Administrative Patent Judges*.

BENNETT, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 3, 5, 11–13, and 15–24. Claims 1, 2, 4, 6–10, 14 are cancelled. Final Act. 2. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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[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 HERE Global B.V. Appeal Br. 2.

CLAIMED SUBJECT MATTER[2]

The disclosed invention relates to providing personalized ranking of categorized search results by "ranking search engine results that are grouped by domains, or conceptual categories, in a way that takes into account the intent of a query for a specific user over a period of time." Spec. ¶ 14. Claim 11, reproduced below, is representative of the claimed subject matter:

> 11. A computer method of processing a search query received by a computer search engine and personalizing a ranking of search query results for a current user, the method comprising:
>
> computing a click query probability "p(click|query)" at a ranking system computer, wherein the click query probability defines, for each domain represented in the search query results, probability of a click on a result in the domain based on query-click behavior information collected from a user population in response to prior queries prior to receiving a current search query, wherein each domain is a domain of a predetermined set of conceptual domains;
>
> designating a plurality of pods corresponding respectively to the domains, wherein each of the pods is a grouping of the query results mapped to a respective one of the domains;
>
> computing a population ranking of the domains represented in the search query results according to the computed click query probabilities;
>
> computing a click user probability "p(click|user)" for each of the pods, the click user probability comprising probability of a click on a result in each pod with respect to the current user based on query-click behavior information collected from the current user in response to prior search queries not including the current search query;

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[2] Our decision relies upon Appellant's Appeal Brief ("Appeal Br.," filed July 20, 2018); Reply Brief ("Reply Br.," filed Nov. 30, 2018); Examiner's Answer ("Ans.," mailed Oct. 4, 2018); Final Office Action ("Final Act.," mailed Feb. 20, 2018); and the original Specification ("Spec.," filed Oct. 5, 2012).

computing a user ranking of the pods by the click user probability;

computing a merged score "ms" that combines a ranking of the pods, the population ranking of the domain by the click query probability, and the user ranking of the domain by the click user probability;

computing a final ranking of the domains represented in the search query results from a highest computed merged score to a lowest computed merged score for use by the search engine, wherein the merged score is defined as:

ms= 1 / (ro + 1) + wrq / (rq + 1) + wru / (ru + 1), wherein:

ro = an original ranking of query results of the current search query onto the domains without using the query-click behavior information

rq = rank by p(click|query)

ru = rank by p(click|user)

wrq = heuristic weight of rq in final rank

wru = heuristic weight of ruin final rank

re-ranking the search query results based on the final ranking of the domains; and

initiating a presentation of the search query results as re-ranked on a user interface displayed to the current user.

Appeal Br. 20–21 (Claims App.).

REJECTION

Claims 3, 5, 11–13, and 15–24 stand rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. Final Act. 2.

ANALYSIS

In issues involving subject matter eligibility, our inquiry focuses on whether the claims satisfy the two-step test set forth by the Supreme Court in *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208 (2014). The Supreme Court instructs us to "[f]irst . . . determine whether the claims at issue are directed to [a] . . . patent-ineligible concept[]" (*id.* at 217), and, in this case, the

inquiry centers on whether the claims are directed to an abstract idea. If the initial threshold is met, we then move to the second step, in which we "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.* (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 79, 78 (2012)). The Supreme Court describes the second step as a search for "an 'inventive concept'—*i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.'" *Alice*, 573 U.S. at 217–18 (quoting *Mayo*, 566 U.S. at 72–73).

The USPTO has published revised guidance on the application of § 101. USPTO's *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) ("Guidance"). Under the Guidance, we first look to whether the claim recites:

> (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes) (Guidance, Step 2A, prong 1); and
>
> (2) additional elements that integrate the judicial exception into a practical application (*see* MANUAL OF PATENT EXAMINING PROCEDURE (MPEP) § 2106.05(a)–(c), (e)–(h) (9th Ed., Rev. 08.2017, 2018)) (Guidance, Step 2A, prong 2).

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

Guidance (Step 2B).

Examiner's Determinations and Conclusion

The Examiner concludes the claimed invention is directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more. Final Act. 2. Applying the first step of the *Alice* inquiry, the Examiner determines the claims "are directed to an abstract idea of 'organizing and manipulating information through mathematical correlations', previously identified by the court as abstracted idea, similar to Digitech." Final Act. 2 (emphasis omitted).

At *Alice* step 2, the Examiner determines the claims do not recite elements sufficient to amount to significantly more than the abstract idea because:

> [T]he recitation of generic computer implementation (Claim 11), a processor, at least one memory (Claim 15), and non-transitory computer readable storage medium (Claim 20) only amount to generic computer components utilized to implement the abstract idea on a computer (see specification as filed, [0056]). None of these additional elements, when taken either alone or in combination, amount to significantly more than the abstract idea.

Final Act. 2–3.

The Examiner further explains:

> In the present case, the claims take existing information (i.e. "query-click behavior" from user population, "query-click

> behavior for a current user, domains represented in search query results), and organizes it unto a new form using mathematical algorithms to manipulate the existing information to generate additional information (designating a plurality of pods, computing population and user rankings, computing probabilities, computing a merged score, resulting in computing a final ranking of the domains).

Final Act. 4. Failing at both *Alice* step 1 and *Alice* step 2, the Examiner concludes the claims are directed to patent-ineligible subject matter.

Appellant's Contentions

Appellant offers several arguments in favor of eligibility.[3] Appellant first argues the claims are not directed to an abstract idea because they solve a technical problem with a technical solution. Appeal Br. 10 ("[T]he claimed invention is directed to solving the problem with contemporary search engines i[n] their inability to resolve ambiguous queries."). Appellant further contends the claims provide technical advantages in that search results are "grouped by domains, or conceptual categories, in a way that takes into account the intent of a query for a specific user over a period of time." Appeal Br. 12 (quoting Spec. ¶ 14).

Appellant also advances arguments under *Alice* step 2. Specifically, Appellant argues that "the claims amount to significantly more than the exception" (Appeal Br. 13) as an ordered combination "which, when considered as a whole, is NOT drawn merely to an abstract idea" (Appeal Br. 14). Appellant further asserts that:

> For example, determination of "a click query probability "p(click|query)" by "**a ranking system computer**" to determine

[3] Appellant's arguments are made exclusively as to independent claim 11, which we select as representative.

> "a final ranking of the domains" and "re-ranking the search query results based on the final ranking of the domains" and "initiating a presentation of the search query results as re-ranked on a user interface displayed to the current user" can significantly improve the conventional search engine (which cannot process ambiguous queries well). Appellants submit that at least the recited components highlighted above amount to significantly more than an abstract idea or a generic computer system for implementing an abstract idea.

Appeal Br. 16. Appellant also argues the Examiner failed to provide an adequate evidentiary basis under Step 2B of the Guidance, asserting that

> [C]ontrary to the Examiner's assertion on page 6, 2nd para of the final Office Action dated February 20, 2018, the limitations of the merged score defined as: ms = 1 / (ro + 1) + wrq (rq + 1) + wru / (ru + 1) and the relevant parameters, used in computing a final ranking of the domains represented in the search query results from a highest computed merged score to a lowest computed merged score for use by the search engine, thus "re-ranking the search query results based on the final ranking of the domains, and initiating a presentation of the search query results as re-ranked on a user interface displayed to the current user" are NOT generic computer functions that are well-understood, routine and conventional activities.

Appeal Br. 16–17.

Guidance, Step 2A, Prong One[4]
The Judicial Exception

Applying the Guidance, we are not persuaded of Examiner error. The Guidance instructs us first to determine whether any judicial exception to patent eligibility is recited in the claim. The Guidance identifies three

[4] Throughout this opinion, we give the claim limitations the broadest reasonable interpretation consistent with the Specification. *See In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

judicially-excepted groupings: (1) mathematical concepts; (2) certain methods of organizing human activity such as fundamental economic practices, fundamental economic principles or practices, commercial or legal interactions, and managing personal behavior or relationships or interactions between people; and (3) mental processes. Our analysis here focuses on the first grouping—mathematical concepts.

In TABLE 1 below, we identify in *italics* the specific claim limitations that we conclude recite an abstract idea.

TABLE 1

Independent Claim 11	**Analysis Under Revised Guidance**
(a) A computer method of processing a search query received by a computer search engine and personalizing a ranking of search query results for a current user, the method comprising:	
(b) *computing a click query probability "p(click|query)"* **at a ranking system computer**, *wherein the click query probability defines, for each domain represented in the search query results, probability of a click on a result in the domain based on query-click behavior information collected from a user population in response to prior queries prior to receiving a current search query, wherein each domain is a domain of a predetermined set of conceptual domains*;	Computing a probability is an abstract idea, i.e., "mathematical concept — mathematical relationships, mathematical formulas or equations, mathematical calculations." *See* Revised Guidance 52. The recitation of "a ranking system computer" is a generic computer component.

Independent Claim 11	Analysis Under Revised Guidance
(c) designating a plurality of pods corresponding respectively to the domains, wherein each of the pods is a grouping of the query results mapped to a respective one of the domains;	"Designating" is an abstract idea, i.e., an "observation, evaluation, judgment, opinion" which could be performed as a mental process. *See* Revised Guidance 52.
(d) *computing a population ranking of the domains represented in the search query results according to the computed click query probabilities*;	Computing a population ranking is an abstract idea, i.e., "mathematical concept — mathematical relationships, mathematical formulas or equations, mathematical calculations." *See* Revised Guidance 52.
(e) *computing a click user probability "p(click|user)" for each of the pods, the click user probability comprising probability of a click on a result in each pod with respect to the current user based on query-click behavior information collected from the current user in response to prior search queries not including the current search query*;	Computing a probability is an abstract idea, i.e., "mathematical concept — mathematical relationships, mathematical formulas or equations, mathematical calculations." *See* Revised Guidance 52.
(f) *computing a user ranking of the pods by the click user probability*;	Computing a ranking is an abstract idea, i.e., "mathematical concept — mathematical relationships, mathematical formulas or equations, mathematical calculations." *See* Revised Guidance 52.
(g) *computing a merged score "ms" that combines a ranking of the pods, the population ranking of the domain by the click query probability, and the user ranking*	Computing a merged score is an abstract idea, i.e., "mathematical concept — mathematical relationships, mathematical formulas or equations, mathematical

Independent Claim 11	Analysis Under Revised Guidance
of the domain by the click user probability;	calculations." *See* Revised Guidance 52.
(h) *computing a final ranking of the domains represented in the search query results from a highest computed merged score to a lowest computed merged score for use by the search engine, wherein the merged score is defined as:* *ms= 1 / (ro + 1) + wrq / (rq + 1) + wru / (ru + 1), wherein:* *ro = an original ranking of query results of the current search query onto the domains without using the query-click behavior information* *rq = rank by p(click|query)* *ru = rank by p(click|user)* *wrq = heuristic weight of rq in final rank* *wru = heuristic weight of ru in final rank*	Computing a final ranking based on a mathematical formula for calculating a merged score is an abstract idea, i.e., "mathematical concept — mathematical relationships, mathematical formulas or equations, mathematical calculations." *See* Revised Guidance 52.
(i) *re-ranking the search query results based on the final ranking of the domains*; and	Re-ranking based on numerical ranking is an abstract idea, i.e., "mathematical concept — mathematical relationships, mathematical formulas or equations, mathematical calculations." *See* Revised Guidance 52.
(j) initiating a presentation of the search query results as re-ranked on a user interface displayed to the current user.	Transmitting or outputting information for display is insignificant post-solution activity. Revised Guidance 55, n.31; *see also*

Independent Claim 11	Analysis Under Revised Guidance
	MPEP § 2106.05(g); *and see buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed. Cir. 2014) (determining a claim reciting a computer that receives and sends information over a network is directed to an abstract idea); *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017) (holding that displaying data is an abstract idea).

We determine that claim 11 recites an abstract idea under the Guidance. This is so because limitations (b) and (d)–(i) each recite mathematical relationships, mathematical formulas or equations, and/or mathematical calculations, and limitation (c) recites a mental process.

Revised Guidance, Step 2A, Prong Two
Integration of the Judicial Exception into a Practical Application

Having determined that the claims recite a judicial exception, our analysis under the Guidance turns now to determining whether there are "additional elements that integrate the judicial exception into a practical application." *See* Guidance (citing MPEP § 2106.05(a)–(c), (e)–(h)). We determine whether the recited judicial exception is integrated into a practical application of that exception by: (1) identifying whether there are any additional elements recited in the claim beyond the judicial exception(s); and (2) evaluating those additional elements individually and in combination to determine whether they integrate the exception into a practical application.

Limitation (b) recites the use of "a ranking system computer." This computer is described in the Specification at a high level without detail

regarding its structure or operation. As such, we do not find the recitation of a generic computer sufficient to integrate the recited judicial exception into a practical application. Guidance at 52 n.14 ("[P]erformance of a claim limitation using generic computer components does not necessarily preclude the claim limitation from being in the mathematical concepts grouping.").

Claim 11 further recites the additional limitation of "initiating a presentation of the search query results as re-ranked on a user interface displayed to the current user." This limitation is insufficient to integrate the recited judicial exception into a practical application because it amounts only to extra-solution data gathering, manipulation, and output. *See* MPEP § 2106.05(g); *see also Parker v. Flook*, 437 U.S. 584, 588–89 (1978) (holding that step of adjusting an alarm limit variable to a figure computed according to a mathematical formula was "post-solution activity").

As we noted above, Appellant asserts the claimed invention addresses technical challenges and improves computer-related technology. Appeal Br. 11–12. We are not persuaded by Appellant's arguments because we agree with the Examiner that the purported improvements are manifested in the mathematical calculations performed by a generic computer. Ans. 5. That is, the improvements provided by the claim are in the abstract realm, and they are insufficient to integrate the recited abstract idea into a practical application. *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1168 (Fed. Cir. 2018) ("What is needed is an inventive concept in the non-abstract application realm.").

We agree with the Examiner that claim 11 bears similarity to the claims held ineligible in *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014), where the Federal Circuit held claims

to a "process of organizing information through mathematical correlations" were directed to an abstract idea. *Id.* at 1350. Like the claims in *Digitech*, Appellant's claim 11 "recites an ineligible abstract process of gathering and combining data" and "employs mathematical algorithms [(calculations)] to manipulate existing information to generate additional information[, which] is not patent eligible. '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.'" *Digitech*, 758 F.3d at 1351 (quoting *Flook*, 437 U.S. at 595 (internal quotations omitted)). More recently, our reviewing court explained that, similar to *Digitech*, claims applying a mathematical formula (to assign image codes) as well as encoding and decoding image data recite an abstract idea. *See RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1326–27 (Fed. Cir. 2017). In particular, the Federal Circuit explained that claims focused on **mathematical concepts** are abstract—"outside of the math, claim 1 . . . is not directed to otherwise eligible subject matter. Adding one abstract idea (math) to another abstract idea (encoding and decoding) does not render the claim non-abstract." *RecogniCorp*, 855 F.3d at 1327.

In sum, we find each of the limitations of claim 11 recite either abstract ideas or extra-solution activity as identified in TABLE 1 in *Step 2A(i)*, *supra*, and none of the limitations integrate the judicial exception into a practical application as determined under one or more of the MPEP sections cited above. The claim as a whole merely uses computer instructions to implement the abstract idea on a computer or, alternatively, merely uses a computer as a tool to perform the abstract idea.

Therefore, on this record, Appellant has not shown an improvement to computer technology or practical application under the guidance of MPEP section 2106.05(a) ("Improvements to the Functioning of a Computer or to Any Other Technology or Technical Field") or section 2106.05(e) ("Other Meaningful Limitations"). Nor does Appellant advance any arguments in the Brief(s) that are directed to the *Bilski* machine-or-transformation test, which would only be applicable to method (process) claims. *See* MPEP § 2106.05(b) (Particular Machine) and 2106.05(c) (Particular Transformation).

Accordingly, we conclude the judicial exception is not integrated into a practical application, and thus the claim is directed to the judicial exception.

The Inventive Concept – Step 2B

Having determined the claim is directed to a judicial exception, we proceed to evaluating whether the claim adds a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field (*see* MPEP § 2106.05(d)) or simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. *See* Guidance at 56.

Our review of the Examiner's rejection under Step 2B is guided by the revised examination procedure published online by the USPTO on April 19, 2018, entitled "Changes in Examination Procedure Pertaining to Subject Matter Eligibility, Recent Subject Matter Eligibility Decision (*Berkheimer v. HP, Inc.*)" ("*Berkheimer Memorandum*"), which imposed a new fact finding requirement for Examiners, as applicable to rejections under § 101. We

agree with the Examiner that the claim does not add specific limitations beyond what is well-understood, routine, and conventional.

As noted above, Appellant's argument with respect to Step 2B rests primarily on *Berkheimer*, and the lack of evidence that the additional limitations are well understood, routine, and conventional. Appeal Br. 16–17.

Appellant's argument is not supported by the record. The Examiner does not find "the claim element of the claimed merged score defined as: ms= 1 / (ro + 1) + wrq / (rq + 1) + wru / (ru + 1), the relevant parameters, used in computing a final ranking of the domains represented in the search query results from a highest computed merged score to a lowest computed merged score for use by the search engine, thus re-ranking and presenting the search query results based on the final ranking of the domains" to be well understood, routine or conventional. Final Act. 4. Instead, the Examiner determines that those limitations are mathematical concepts which form part of the abstract idea itself.

Evaluating representative claim 11 under step 2 of the *Alice* analysis, we conclude it lacks an inventive concept that transforms the abstract idea into a patent-eligible application of that abstract idea.

CONCLUSION

Under our Revised Guidance, governed by relevant case law, claims 3, 5, 11–13, and 15–24 are patent-ineligible under 35 U.S.C. § 101, and we sustain the rejection.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Basis/Reference(s)	Affirmed	Reversed
3, 5, 11–13, 15–24	101	patent eligibility	3, 5, 11–13, 15–24	

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