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UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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Ex parte XUAN CHEN, MIAO HE, HAO JI, CHANG R. REN,
BING SHAO, QI M. TIAN, and XIAOBO ZHENG
_____

Appeal 2020-002477
Application 14/747,425
Technology Center 3600
_____

Before CAROLYN D. THOMAS, JAMES B. ARPIN, and
MICHAEL M. BARRY, *Administrative Patent Judges*.

THOMAS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the
Examiner's decision rejecting claims 1, 2, 5–7, and 9. *See* Appeal Br.,
Claim App. We have jurisdiction over the appeal 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. Appellant identifies the real party in interest as International
Business Machines Corporation. Appeal Br. 2.

The present invention relates generally to predicting and reducing product return. *See* Spec., Abstract.

Independent claim 1, reproduced below, is representative of the appealed claims:

> 1.   A method, in a data processing system comprising at least one processor and at least one memory coupled to the at least one processor, the at least one memory comprising instructions that are executed by the at least one processor to cause the at least one processor to implement a product-return prediction mechanism for predicting and reducing product return, the method comprising:
>
> responsive to a current product being purchased by a customer via an e-commerce purchase, determining, by an e-commerce order filtering module of the product-return predication mechanism, whether the current product is a non-regular product purchase, wherein the non-regular product purchase is at least one of a product purchase for another person as identified by utilization of a shipping address other than an address recorded for the customer or a purchase of a product that is the same as the current product within a predetermined time frame;
>
> filtering out, by the e-commerce order filtering module, the non-regular product purchase thereby leaving a historical regular product purchase;
>
> responsive to the current product being the historical regular product purchase, for the historical regular product purchase associated with the current product purchase by the customer:
>
> generating, by a customer return probability distribution generation engine of the product-return predication mechanism, a distribution of a number of product purchases g_1 (D, T), wherein D represents a deviation or distance of the purchased product from a customer's preference for the current product and wherein T represents a time the customer spent browsing a website for the current product; and

generating, by the customer return probability distribution generation engine, a distribution of a number of product returns, g_2 *(D, T)*;

determining, by the customer return probability distribution generation engine, a probability of return (Prob(return)) of the current product as a function of the number of product purchases (g_1), the number of product returns (g_2), the distance *D,* and the browsing time *T,* Prob(return) = f (g_1, g_2, *D, T)*; and

responsive to the identified probability of return being greater than a predetermined threshold, improving, by the product-return predication mechanism, a product description page associated with the current product in order to reduce purchasing mistakes.

Appellant appeals the following rejection:

Claims 1, 2, 5–7, and 9 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to patent-ineligible subject matter without significantly more. Final Act. 2–7.

We review the appealed rejections for error based upon the issues identified by Appellant, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential).

ANALYSIS

Rejection under § 101

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. However, the U.S. Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and

abstract ideas" are not patentable. *E.g., Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Court's two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with the framework, we first determine what concept the claim is "directed to." *See Alice*, 573 U.S. at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk."); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk."). For example, concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 69 (1972)).

The USPTO published revised guidance on the application of 35 U.S.C. § 101. USPTO's 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) ("Revised Guidance"), *updated by* USPTO, *October 2019 Update: Subject Matter Eligibility* (available at https://www.uspto.gov/sites/default/files/documents/ peg_oct_2019_update.pdf) (jointly referred to as "Revised Guidance"); *see also* October 2019 Patent Eligibility Guidance Update, 84 Fed. Reg. 55942 (Oct. 18, 2019) (notifying the public of the availability of the October update).

Under the Revised Guidance "Step 2A," the office first looks 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); and

(2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)). 84 Fed. Reg. at 51–52, 55.

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, does the Office then (pursuant to the Revised Guidance "Step 2B") 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. 84 Fed. Reg. at 56.

<u>Step 2A, Prong 1 (Does the Claim Recite a Judicial Exception?)</u>

With respect to independent method claim 1, the Examiner determines that the claims fall within the abstract idea grouping of "certain methods of organizing human activity (business relations; relationships or interactions between people" (Final Act. 3), "because the claims are related to predicting individual customer returns" (*id.* at 4), which includes "fundamental economic principles or practices . . . commercial or legal interactions . . . or sales activities or behaviors." *Id.*

For example, Appellant's Specification discloses:

As stated previously, it is desirable to minimize costs associated with product returns. Thus, the illustrative embodiments provides for automatically predicting a probability of each post-purchase return based on historical purchasing and returning data and product characteristics associated with each customer. That is, actively predicting customer post-purchase return on an individual customer level is an issue that raises the costs associated with product returns. Current customer return solutions mainly focus on customer returning process management and lack the predictive capability. Current solutions with predictive capability only provide customer return prediction for products from a macro level, which is not accurate when it comes down to each individual purchase. Thus, the mechanisms of the illustrative embodiments provide an integrated approach to predict customers' merchandise returns in E-commerce by predicting customers' tastes toward different products and predicting a probability that a customer will return a previously bought product. The mechanisms of the illustrative embodiments provide a solution to post-purchase customer return prediction by predicting a customer's probability of returning the purchased product on an individual level based on a taste associated with the customer. Further, the mechanisms of the illustrative embodiments dynamically update each probability each time new data is available and thus, provide a dynamically evolving approach to adapt to newly available data.

Spec. ¶ 17. In other words, the claimed invention seeks to minimize cost associated with product returns by predicting a probability of each post-purchase return based on taste towards different products, i.e., based on sales activities and behaviors of the customer.

Claim 1 recites at least the following limitations: (1) "responsive to a current product being purchased . . . determining . . . whether the current product is a non-regular product purchase," (2) "filtering out . . . the non-regular product purchase thereby leaving a historical regular product

purchase," (3) "responsive to the current product being the historical regular product purchase . . . generating a distribution of number of product purchase g_1 (D,T) . . . and generating . . . a distribution of number of product returns, g_2 (D,T)," (4) "determining . . . a probability of return," and (5) "responsive to the identified probability of return being greater than a predetermined threshold, improving . . . a product description page associated with the current product." These limitations, under their broadest reasonable interpretation, recite fundamental economic practice akin to sales activities and behaviors because the limitations all recite operations that would ordinarily take place in a commercial environment.

For example, at least the following decisions from our reviewing court have found many types of fundamental commercial practices patent ineligible: *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359 (Fed. Cir. 2015), *cert. denied*, 136 S. Ct. 701 (mem) (2015) (offer-based price optimization); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350 (Fed. Cir. 2014) (transaction guaranty); *Personalized Media Commc'ns, L.L.C. v. Amazon.com Inc.*, 671 F. App'x 777 (mem) (Fed. Cir. 2016) (receiving instructions for ordering).

Appellant contends that "a process in a computer system cannot be performed within a human mind." *Id.* In other words, Appellant contends that the claimed invention cannot be performed in the human mind, i.e., a mental process, because it is specific to computer technology. However, the Examiner is not associating the claimed steps with "mental processes," but rather the abstract concept of "certain methods of organizing human activity, particularly the sub-grouping of sales activities and behaviors." *See* Final Act. 4; Ans. 4.

Appellant further contends that "[e]ven if the claims were solely directed to predicting individual customer returns . . . this is not a 'certain method of organizing human activities." Appeal Br. 9. We disagree with Appellant. As highlighted above in Appellant's Specification, the claimed invention seeks to predict a post-purchase return of a product, i.e., commercial interactions and/or sales activities/behaviors, which falls under the abstract category of certain methods of organizing human activities. There is no requirement that each and every abstract grouping or sub-grouping be present in the claims. It is enough for the Examiner to highlight a single appropriate abstract idea, which the Examiner has done here. As such, even if *arguendo* Appellant's contentions regarding various other groupings of abstract ideas (which the Examiner is not relying on) are correct, Appellant has not persuasively shown that the claims do not include limitations that fall squarely under the at least one concept which the Examiner has explicitly relied upon, i.e., sales activities or behaviors.

Also, it is worth noting that the sub-groupings of certain method of organizing human activity encompass both activity of a single person (for example, a person following a set of instructions or a person signing a contract online) and activity that involves multiple people (such as a commercial interaction), and thus, certain activity between a person and a computer (for example a method of anonymous loan shopping that a person conducts using a mobile phone) may fall within the "certain methods of organizing human activity" grouping. The number of people involved in the activity is not dispositive as to whether a claim limitation falls within this grouping. Instead, the determination should be based on whether the activity itself falls within one of the sub-groupings.

Additionally, we agree with the Examiner that the dependent claims "inherit the deficiencies set forth with respect to the independent claims." Final Act. 5. Particularly, the dependent claims contain only limitations that recite the identified abstract idea, and do not create any additional elements beyond this abstract idea. Therefore, we disagree with the argument that the Office Action fails to address all the dependent claims. *See* Appeal Br. 15. Nor does Appellant persuasively explain how the elements in the dependent claims recite more than the abstract ideas. *See generally* Appeal Br.

Therefore, for at least the aforementioned reasons, we agree with the Examiner that claim 1 recites an abstract idea, which we conclude is "certain methods of organizing human activity."

<u>Step 2A—Prong 2 (integration into Practical Application)[2]</u>

Under the Revised Guidance, we now must determine if additional elements in the claims integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

Here, we consider the claim as a whole, i.e., "the limitations containing the judicial exception as well as the additional elements in the claim besides the judicial exception . . . evaluated together to determine whether the claim integrates the judicial exception into a practical application." October 2019 Patent Eligibility Guidance Update, at 12, available at http://www.uspto.gov/PatentEligibility.

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[2] We acknowledge that some of the considerations at Step 2A, Prong 2, properly may be evaluated under Step 2 of *Alice* (Step 2B of the Office revised guidance). For purposes of maintaining consistent treatment within the Office, we evaluate them under Step 1 of *Alice* (Step 2A of the Office revised guidance). *See* Revised Guidance, 84 Fed. Reg. at 55 n.25, 27–32.

Beyond the abstract idea noted above in the Prong 1 analysis, claim 1 also recites several additional elements: "a data processing system," "at least one processor," and "e-commerce order filtering module." However, these additional elements do not: (1) improve the functioning of a computer or other technology; (2) are not applied with any particular machine (except for a generic computer); (3) do not effect a transformation of a particular article to a different state; and (4) are not applied in any meaningful way beyond generally linking the use of the judicial exception to a particular technological environment, such that the claim as a whole is more than a drafting effort designed to monopolize the exception. *See* MPEP §§ 2106.05(a)–(c), (e)–(h). In other words, the aforementioned additional element (or combination of elements) recited in Appellant's representative claim 1 do not integrate the judicial exception into a practical application. *See* Revised Guidance, 84 Fed. Reg. at 54–55 ("Prong 2").

Appellant contends that "the invention is specifically directed to solving a problem in the computer arts with a technological computer solution . . . an improved computer tool that operates to predict customer's merchandise returns." Appeal Br. 5–6. Appellant further contends that the claimed limitations "are operations that are only performed by a specifically configured computing device and are operations that only a computer would need to perform" (*id.* at 7), i.e., an operation rooted in computer technology. We disagree with Appellant.

Although not argued in the Appeal Brief (*see generally* Appeal Br.), we determine that the present invention is distinguishable from *McRo*. For instance, in *McRO*, the Federal Circuit concluded that the claim, when considered as a whole, was directed to a "technological improvement over

the existing, manual 3-D animation techniques" through the "use of limited rules specifically designed to achieve an improved technological result in conventional industry practice." *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1316 (Fed. Cir. 2016). Specifically, the Federal Circuit found that the claimed rules allow computers to produce accurate and realistic lip synchronization and facial expressions in animated characters that previously could only be produced by human animators; and the rules are limiting because they define morph weight sets as a function of phoneme sub-sequences. *Id.* at 1313.

In contrast, here, Appellant has not identified any analogous improvement attributable to the claimed invention. Although providing a probability of return may improve a business process, it does not achieve an improved technological result. We see no parallel between the limiting rules described in *McRO* and the results-based rules recited in Appellant's claims.

Also, contrary to Appellant's invention, the claims at issue in *Enfish* were directed to a specific type of data structure, i.e., a self-referential table for a computer database, designed to improve the way a computer carries out its basic functions of storing and retrieving data. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016). In rejecting a § 101 challenge, the court in *Enfish* held that "the plain focus of the claims is on an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity." *Id.* at 1336.

Here, Appellant does not point to anything in the claim that resembles the inventive, self-referential data structure at issue in *Enfish*. Appellant also does not direct our attention to anything in the Specification to indicate that

the claimed invention provides an improvement in the computer's technical functionality.

Instead, the determined probability of return improves economic tasks, i.e., minimizes costs associated with product returns. *See* Spec. ¶ 17. That is, here the arguably innovative technique of the appealed claims is inextricably part of the abstract idea of commercial interactions or sales activities. Moreover, nothing in the claims, understood in light of the Specification, requires anything other than an off-the-shelf, conventional computer used for collecting and processing various information. Therefore, unlike *Enfish*, the claims are directed not to improvement in computer capabilities, but to the results of applying an abstract idea.

Furthermore, we note that the claimed step of "*improving . . . a product description page*" represents nothing more than post-solution activity. This post-solution step—even when performed over a computer network via communications between a data processing system and e-commerce order module—are insufficient to integrate the judicially excepted steps into a practical application. *See Alice*, 573 U.S. at 224 ("use of a computer to create electronic records, track multiple transactions, and issue simultaneous instructions" is not an inventive concept).

The claimed method fails to improve the functioning of either the data processing system comprising at least one processor or the e-commerce order-filtering module. Rather, these components merely link the underlying abstract idea (i.e., certain methods of organizing human activities) to a particular technological environment. That is, as stated in the Specification, the claimed process simply "minimizes costs associated with product returns . . . [by] predicting a probability of each post-purchase return." Spec. ¶ 17.

Thus, the claimed method uses conventional computers and computer networks to automate tasks that would have otherwise been performed by a human. Such claims are not patent eligible. *See OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015) ("relying on a computer to perform routine tasks more quickly or more accurately is insufficient to render a claim patent eligible").

For at least the reason noted *supra*, we determine that claim 1 (1) recites a judicial exception and (2) does not integrate that exception into a practical application. Thus, representative claim 1 is directed to the aforementioned abstract idea.

Alice/Mayo—Step 2 (Inventive Concept)
 Step 2B identified in the Revised Guidance

Turning to the second step of the *Alice* inquiry, we now look to whether claim 1 contains any "inventive concept" or adds anything "significantly more" to transform the abstract concept into a patent-eligible application. *Alice*, 573 U.S. at 216. As recognized by the Revised Guidance, an "inventive concept" under *Alice* step 2 can be evaluated based on whether an additional element or combination of elements:

> (1) adds a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field, which is indicative that an inventive concept may be present; or
> (2) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception, which is indicative that an inventive concept may not be present.

See Revised Guidance, 84 Fed. Reg. at 56; *see* MPEP § 2106.05(d).

We find no element or combination of elements recited in Appellant's claim 1 that contains any "inventive concept" or adds anything "significantly

more" to transform the abstract concept into a patent-eligible application.
Appellant has not adequately explained how claim 1 is performed, such that
it is not a routine and conventional function of a generic computer. In fact,
Appellant's Specification merely indicates that "the mechanisms described
herein may be implemented as . . . software executing on general purpose
hardware." *See* Spec. ¶ 18; *see also id.* ¶ 48.

Because Appellant's independent claim 1 is directed to a patent-
ineligible abstract concept, does not include additional elements that
integrate the judicial exception into a practical application, and does not add
a specific limitation beyond the judicial exception that is not "well-
understood, routine, and conventional," we sustain the Examiner's rejection
of the claims 1, 2, 5–7, and 9 under 35 U.S.C. § 101 as being directed to
non-statutory subject matter in light of *Alice*, its progeny, and the Revised
Guidance.

CONCLUSION

The Examiner's rejection of claims 1, 2, 5–7, and 9 under 35 U.S.C.
§ 101, because the claimed invention is directed to a judicial exception
without significantly more, is affirmed.

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 7, 5–7, 9	101	Eligibility	1, 2, 5–7, 9	

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

AFFIRMED