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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ROBERT MICHAUD, RICHARD O. MICHAUD, and DAVID N. ESCH

Appeal 2017-003066[1]
Application 14/216,266[2]
Technology Center 3600

Before HUBERT C. LORIN, ANTON W. FETTING, and TARA L. HUTCHINGS, *Administrative Patent Judges*.

HUTCHINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

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[1] Our decision references Appellants' Appeal Brief ("App. Br.," filed Oct. 17, 2016), Reply Brief ("Reply Br.," filed Dec. 23, 2016), and Specification ("Spec.," US 2014/0289163, pub. Sept. 25, 2014); the Examiner's Answer ("Ans.," mailed Nov. 18, 2016), Advisory Action ("Adv. Act.," July 19, 2016), and Final Office Action ("Final Act.," mailed April 15, 2016); and the transcript of the oral hearing held on January 8, 2019 ("Tr.").

[2] Appellants identify Michaud Partners LLP as the real party in interest. App. Br. 3.

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1–25. An oral hearing was held on January 8, 2019. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM

CLAIMED INVENTION

Claims 1, 14, and 19 are the independent claims on appeal. Claim 14, reproduced below, is illustrative of the claimed subject matter:

> 14. A computer-implemented method for modeling one or more partial trades to lower a trade-cost function when rebalancing an investment portfolio, the method comprising:
>
> programmatically receiving, as a first input, an initial investment portfolio comprising a plurality of assets, each asset characterized by a weighting coefficient;
>
> programmatically receiving, as a second input, a Michaud resampled efficient frontier of portfolios, the Michaud resampled efficient frontier programmatically generated based on input data corresponding to returns of a plurality of asset classes;
>
> programmatically receiving, as a third input, a first target optimal portfolio on the Michaud resampled efficient frontier of portfolios;
>
> programmatically modeling, using a computing device having encoded thereon computer-executable instructions, a first partial trade based on moving the initial portfolio toward the first target optimal portfolio to generate a first partially rebalanced portfolio, the first partial trade modeled to reduce a first optimality discrepancy associated with the initial portfolio relative to the first target optimal portfolio;
>
> determining, using the computing device, a first rebalance probability associated with the first partially rebalanced portfolio;
>
> determining, using the computing device, that the first partially rebalanced portfolio is statistically optimal if the first rebalance probability satisfies a predefined rebalance probability criterion; and

displaying, using a visual display device, an indication that the first partially rebalanced portfolio is statistically optimal.

REJECTION

Claims 1–25 are rejected under 35 U.S.C. § 101 as directed to a judicial exception without significantly more.

ANALYSIS

Appellants argue independent claims 1–25 as a group, taking claim 14 as representative. App. Br. 11. We also select independent claim 14 as representative of the pending claims. The remaining claims stand or fall with claim 14. 37 C.F.R. § 41.37(c)(1)(iv).

Under 35 U.S.C. § 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. The Supreme Court, however, has long interpreted § 101 to include an implicit exception: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014).

The Supreme Court, in *Alice*, reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (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 Corp.*, 573 U.S. at 217. The first step in that analysis is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." *Id.* If the claims are not directed to a patent-ineligible concept, e.g., an abstract idea, the inquiry ends. Otherwise, the inquiry proceeds to the second step where the elements

of the claims are considered "individually and 'as an ordered combination'" to determine whether there are additional elements that "'transform the nature of the claim' into a patent-eligible application." *Id.* (quoting *Mayo*, 566 U.S. at 79, 78).

The Court acknowledged in *Mayo*, that "all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas." *Mayo*, 566 U.S. at 71. Therefore, the Federal Circuit has instructed that claims are to be considered in their entirety to determine "whether their character as a whole is directed to excluded subject matter." *McRO, Inc. v. Bandai Namco Games Am., Inc.*, 837 F.3d 1299, 1312 (Fed. Cir. 2016) (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)).

Appellants correctly assert that mere involvement of an abstract concept does not render an invention ineligible for patenting. App. Br. 12. The Federal Circuit has explained that "the 'directed to' inquiry applies a stage-one filter to claims, considered in light of the [S]pecification, based on whether 'their character as a whole is directed to excluded subject matter.'" *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016) (quoting *Internet Patents Corp.*, 790 F.3d at 1346). It asks whether the focus of the claims is on a specific improvement in relevant technology or on a process that itself qualifies as an "abstract idea" for which computers are invoked merely as a tool. *See id.* at 1335–36. Here, it is clear from the Specification, including the claim language, that the claims focus on an abstract idea, and not on any improvement to technology and/or a technical field.

We are not persuaded that the Examiner erred in determining that the claims are directed to an abstract idea or that the Examiner otherwise overgeneralized the concept to which the claims are directed without taking the actual claim language into account. App. Br. 11–15. The Specification is titled "METHOD AND COMPUTER PROGRAM FOR MINIMIZING TRADING COSTS SUBJECT TO A PROBABILITY CRITERION OF OPTIMALITY ACCEPTABILITY." The Background section of the Specification describes that appropriately rebalancing an investment portfolio is a central problem for asset management in practice, and describes various known approaches and their shortcomings, such as being incapable to determine how much trading is necessary to reduce the distance in portfolio space of a given portfolio to a target optimal portfolio in order to consider the rebalanced portfolio statistically similar to the target optimal and avoid ineffective trading. Spec. ¶¶ 2–6.

Claim 14 is directed to a method for modeling one or more partial trades to lower a trade-cost function when rebalancing an investment portfolio, and recites the following steps: (1) receiving an initial investment portfolio; (2) receiving a Michaud resampled efficient frontier of portfolios; (3) receiving a first target optimal portfolio Michaud resampled efficient frontier of portfolios; (4) modeling a first partial trade based on moving the initial portfolio toward the first optimal portfolio to generate a first partially rebalanced portfolio; (5) determining a first rebalance probability associated with the first partially rebalanced portfolio; and (6) determining that the first partially rebalanced portfolio is statistically optimal if the first rebalance probability satisfies a predefined rebalance probability; and (7) displaying an indication that the first partially rebalanced portfolio is statically optimal.

Understood in light of the Specification, claim 14 is related to modeling partial trades when rebalancing an investment portfolio, which is a fundamental economic practice, i.e., an abstract idea.

Appellants argue that the claimed subject matter is not a fundamental economic practice, because prior techniques were incapable of determining the necessary amount of trading to reduce the distance in portfolio space to a target portfolio. App. Br. 14 (citing Spec. ¶ 3); *see also* Tr. 6 (citing Decl.[3] ¶¶ 7, 9). Appellants' argument is not persuasive because the advantages described constitute an improvement in the fundamental economic practice of modeling partial trades when rebalancing an investment portfolio. An improved abstract idea is still an abstract idea. *See Mayo*, 566 U.S. at 90 (holding that a novel and nonobvious claim directed to a purely abstract idea is, nonetheless patent-ineligible).

In addition to claim 14 being directed to a fundamental economic practice, the underlying processes recited in claim 14 are all acts that could be performed by a human, e.g., mentally or via pen and paper, without the use of a computer. The Federal Circuit has held that if a method can be performed by human thought alone, or by a human using pen and paper, it is merely an abstract idea and is not patent-eligible under § 101. *See CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372–73 (Fed. Cir. 2011) ("[A] method that can be performed by human thought alone is merely an abstract idea and is not patent-eligible under § 101."); *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) ("Phenomena of nature . . ., mental processes, and abstract intellectual concepts are not patentable, as

[3] Declaration under 37 C.F.R. § 1.132 of Dr. Richard O. Michaud, filed July 7, 2016.

they are the basic tools of scientific and technological work."). And, mental processes remain unpatentable even when automated to reduce the burden on the user of what once could have been done with pen and paper. *CyberSource*, 654 F.3d at 1375 ("That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*."). Simply put, claim 14 is directed to a series of steps that can be performed by a human mentally or with pen and paper, which is an abstract idea. Therefore, we are not persuaded that the Examiner erred in determining that the claims are directed to an abstract idea.

We find no indication in the Specification, nor do Appellants direct us to any indication, that the operations recited in claim 14 invoke any assertedly inventive programming, require any specialized computer hardware or other inventive computer components, i.e., a particular machine, or that the claimed invention is implemented using other than generic computer components to perform generic computer functions. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1256 (Fed. Cir. 2014) ("[A]fter *Alice*, there can remain no doubt: recitation of generic computer limitations does not make an otherwise ineligible claim patent-eligible."). In fact, the Specification suggests just the opposite, i.e., that the claimed invention may be implemented using only generic computer components *See, e.g.*, Spec. ¶ 43.

We also do not find anything in the Specification that attributes an improvement in other technology or technical field to the claimed invention or otherwise indicates that the claimed invention integrates the abstract idea into a "practical application," as that phrase is used in the USPTO's *2019*

Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 55 (January 7, 2019).[4] For example, we find no indication in the Specification that the claimed invention effects a transformation or reduction of a particular article to a different state or thing or improves computer functionality.

Appellants assert that the invention improves the field of portfolio management by eliminating statistically insignificant trading. App. Br. 15–16. But we are not persuaded that improving the field of portfolio management by eliminating statistically insignificant trading is a technological improvement, rather than an improvement to a process directed to an abstract idea for which generic computer components are used in their ordinary capacity.

Attempting to draw an analogy to the patent-eligible claims in *McRO*, Appellants contend that claim 14 is similarly "limited to rules with specific characteristics." App. Br. 14. Appellants contend that the claimed invention teaches a "specific criterion for stopping, namely a criterion related to rebalance probability," instead of trading to the target optimal portfolio regardless of trading cost. *Id.* But in *McRO* the claim at issue was directed to automatically animating the lip synchronization and facial expressions of three-dimensional animated characters. *McRO*, 837 F.3d at 1307–08.

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[4] In accordance with the USPTO's revised guidance, a claim will be considered "directed to" an abstract idea if (1) the claim recites subject matter falling within one of the following groupings of abstract ideas: (a) mathematical concepts; (b) certain methods of organizing human interactions, e.g., fundamental economic principles or practices, commercial or legal interactions; and (c) mental processes, and (2) the claim does not integrate the abstract idea into a practical application. *See* Revised Guidance, 84 Fed. Reg. at 54–55.

There, the Federal Circuit determined that the claimed invention, considered as a whole, used limited rules in a process specifically designed to achieve a technological improvement over existing, manual 3–D animation techniques. *Id.* at 1316. Accordingly, the court determined that the claim is not directed to an abstract idea, and is patent-eligible under 35 U.S.C. § 101. *Id.* We are not persuaded modeling partial trades is a technical field. Nor are we persuaded that using a criterion related to rebalance for stopping trading is a technological improvement.

Referencing the second step of the *Mayo/Alice* framework, Appellants argue that claim 14 "effects an improvement in the field of portfolio management" by "eliminating statistically insignificant trading." App. Br. 15. Appellants' argument is not persuasive at least because we are not persuaded that "portfolio management" is a technical field. Instead, eliminating statistically insignificant trading is an improvement to an abstract idea for which computer components are used in their ordinary capacity.

Here, the additional limitations recited in claim 14 (e.g., the computing device having computer-executable instructions encoded thereon, and a visual display device), whether considered individually or as an ordered combination, simply use generic computer components to perform generic computer functions. *See* Final Act. 5–6. *Alice*, 573 U.S. at 225. They do not.

Here, claim 14 additionally recites a computing device having computer-executable instructions encoded thereon, and a visual display device to execute the abstract idea. There is nothing in the Specification to indicate that the operations recited in the claim require any specialized

hardware or inventive computer components, invoke any assertedly inventive programming, or are implemented using other than generic computer components. The Federal Circuit has "repeatedly recognized the absence of a genuine dispute as to eligibility" where claims have been defended as involving an inventive concept based "merely on the idea of using existing computers or the Internet to carry out conventional processes, with no alteration of computer functionality." *Berkheimer v. HP, Inc.*, 890 F.3d 1369, 1373 (Fed. Cir. 2018) (Moore, J., concurring) (citations omitted).

We are not persuaded, on the present record, that the Examiner erred in rejecting claim 14 under 35 U.S.C. § 101. Therefore, we sustain the Examiner's rejection of claim 14. The remaining claims fall with claim 14.

DECISION

The Examiner's rejection of claims 1–25 under 35 U.S.C. § 101 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED