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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARK JOHN GIBBS and RUSSELL GOYDER

Appeal 2019-000626
Application 13/571,203
Technology Center 3600

BEFORE ALLEN R. MacDONALD, ADAM J. PYONIN, and
JOSEPH P. LENTIVECH, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* Pyonin.

Opinion Dissenting filed by *Administrative Patent Judge* MacDonald.

PYONIN, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the
Examiner's rejection. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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 FinancialCAD Corporation. Appeal Br. 3.

STATEMENT OF THE CASE

Introduction

The Application is directed to “valuing financial contracts and for assessing the risk associated with such contracts.” Spec. ¶ 2. Claims 1 and 3–34 are pending; claims 1, 32, and 33 are independent. Appeal Br. 5, 7. Claim 1 is reproduced below for reference (emphasis added):

1. A method for estimating an expected value of a financial contract, the method performed by a processor programmed to perform the steps of the method and comprising:
 - receiving, at the processor, valuation details for valuation of the contract, the valuation details comprising:
 - one or more particular financial models to be used for valuation of the contract; and
 - a set of stochastic variables within the one or more particular financial models which should be treated stochastically for estimating the expected value of the contract;
 - receiving, at the processor, an internal contract representation and storing the internal contract representation in a memory accessible to the processor, the internal contract representation comprising:
 - one or more flow sets, each flow set comprising one or more cash flow functions, each cash flow function representing an actual cash flow amount at a cash flow time, wherein at least one cash flow function is modeled, at least in part, by at least one of the one or more particular financial models comprising at least one of the set of stochastic variables;
 - one or more choice functions, each choice function representing a choice between a plurality of choice branches at a corresponding choice time, each choice branch comprising at least one of:
 - a downstream flow set; and
 - a downstream choice function;
 - estimating, by the processor, the expected value for the contract, wherein estimating the expected value for the contract comprises:

identifying, by the processor, a downstream choice function within the internal contract representation, the downstream choice function forming at least a part of one of the choice branches of a first choice function within the internal contract representation, the first choice function representing a choice between a first plurality of choice branches at a first choice time, and the downstream choice function representing a choice between a second plurality of choice branches at a downstream choice time, the first choice time preceding the downstream choice time;

for the purpose of estimating the expected value of the contract, *replacing, by the processor, the downstream choice function within the internal contract representation stored in the memory with a trigger rule*, the trigger rule evaluatable based on information known at the first choice time, the trigger rule specifying one of the choice branches of the downstream choice function when evaluated, and the trigger rule based on one or more explanatory stochastic processes selected from the set of stochastic variables which model a cash flow function present in at least one of the choice branches of the downstream choice function;

for a plurality of iterations:

generating, by the processor, a valuation set which specifies one value for each of the stochastic variables within the set of stochastic variables, wherein generating the valuation set comprises, for each stochastic variable within the set of stochastic variables, generating a random draw based on a distribution of the stochastic variable, the random draw representing the one value for the stochastic variable within the valuation set;

evaluating, by the processor, the trigger rule based on a portion of the valuation set comprising stochastic variables whose values are known at or before the first choice time;

specifying, by the processor, one of the choice branches of the downstream choice function based on the evaluation of the trigger rule; and

determining, by the processor, an iteration contract value based on the internal contract representation having the downstream choice function replaced by the trigger rule and at

least a portion of the valuation set and based on the one of the choice branches of the downstream choice function specified by evaluation of the trigger rule;

determining, by the processor, the expected value of the contract to be an average of the iteration values of the contract over the plurality of iterations; and

saving the expected value of the contract in the memory.

Rejection

Claims 1 and 3–33² are rejected under 35 U.S.C. § 101 as being patent ineligible. Final Act. 2.

ANALYSIS

The Examiner determines the claims are patent ineligible under 35 U.S.C. § 101, because “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; *see also Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 217 (2014) (Describing the two-step framework “for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.”).

After the docketing of this Appeal, the USPTO published revised guidance on the application of § 101 (“Guidance”). *See, e.g.*, USPTO 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Memorandum”); USPTO October 2019 Update: Subject Matter

² We note pending dependent claim 34 was not rejected by the Examiner. *See* Final Act. 2; Appeal Br. 39.

Eligibility (Oct. 17, 2019) (“Update”). Under Step 2A of the Guidance, the Office looks to whether the claim recites:

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

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, does the Office then look, under Step 2B, 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.

See Memorandum, 84 Fed. Reg. at 56.

A. *Step 2A, Prong One*

We agree with the Examiner that claim 1 includes “the abstract idea(s) of estimating an expected value of a financial contract.” Final Act. 2. The claim recites “[a] method for estimating an expected value of a financial contract,” and performs steps of receiving “valuation details for valuation of the contract,” receiving “an internal contract representation,” and “determining, . . . the expected value of the contract.” The Examiner correctly determines these limitations are “fundamental economic practices” (Final Act. 6) because the limitations, for determining monetary values for

financial contracts, “describe subject matter relating to the economy and commerce” (Update page 5) and “mitigate[e] risk” (Memorandum, 84 Fed. Reg. at 52). Thus, these limitations recite the abstract concept of “[c]ertain methods of organizing human activity” pursuant to the Guidance.

Memorandum, 84 Fed. Reg. at 52. Additionally, these limitations are, under the Guidance, concepts of “observation, evaluation, judgement, opinion,” and recite the abstract concept of “[m]ental processes.” Memorandum, 84 Fed. Reg. at 52.

Accordingly, we agree with the Examiner that the claim recites an abstract idea under Prong One of the Guidance. *Id.* at 52, 54.

B. Step 2A, Prong Two

Appellant argues the Examiner’s eligibility rejection is in error, because “specific limitations recited in [claim 1] . . . relate to specific improvements in the technology.” Appeal Br. 19–21. Particularly, Appellant asserts that financial contracts often involve “nested choices,” whose evaluation “can involve simulations within simulations which have corresponding computational expense which increases exponentially with the number of iterations in each simulation and the number of nested choices.” Appeal Br. 24. According to Appellant, “[t]he technology-based solution recited in the present claims makes a simplifying approximation by replacing the ‘nested choices’ with a single choice and a ‘trigger rule,’” which “considerably reduces the computational resources required to evaluate the financial contract. In some cases, the method recited in the claims can be used to solve problems that were previously unsolvable within

a suitable time frame or which were otherwise intractable.” Appeal Br. 24 (citing Spec. ¶¶ 131–133).

We are persuaded by Appellant’s argument. The Examiner determines the claimed “replacing, by the processor, the downstream choice function within the internal contract representation stored in the memory with a trigger rule” is not an *additional element*; rather, the Examiner determines the limitation is part of the judicial exception because “the simulation or models involved are computationally intensive but still can be performed by human.” Ans. 4; *see also* Final Act. 11. We appreciate the Examiner’s well-reasoned and thoughtful analyses in both the Final Action and the Answer; however, we disagree with the Examiner on this point. The replacement step of claim 1 relates to performing complex calculations on a computer. The step is not part of the recited exception of estimating an expected value of a financial contract, as the replacement step improves the computer function rather than the calculated contract value. *See* Spec. ¶ 131 (replacing downstream choices with trigger rules will yield a “simplifying approximation”); *cf.* Update page 13 (“it is important to keep in mind that an improvement in the judicial exception itself (e.g., a recited fundamental economic concept) is not an improvement in technology.”). Therefore, we determine the replacing step is an *additional element* “recited in the claim beyond the identified judicial exception(s).” Memorandum, 84 Fed. Reg. at 54–55.

We further determine the replacing step “reflects an improvement in the functioning of a computer, or an improvement to other technology or technical field.” Memorandum, 84 Fed. Reg. at 55; *see also* Update page 12 (“[T]he specification should be evaluated to determine if the disclosure

provides sufficient details such that one of ordinary skill in the art would recognize the claimed invention as providing an improvement.”). As identified by the Specification, “[s]ome contracts [] contain choices” that are “dependent on a later choice operation (i.e. nested choice operations) lead[ing] to the need to perform a simulation within a simulation,” which “has exponential processing expense.” Spec. ¶¶ 131, 133. Appellant’s claim 1 reduces the computer processing expense by the recitation of “replacing, by the processor, the downstream choice function within the internal contract representation stored in the memory with a trigger rule.” That is, the claim replaces an unknown choice outcome (the “downstream choice function”) with “information which can be predicted at the choice time” (the “trigger rule”). Spec. ¶¶ 138, 142. The replacement trigger rule, containing predictable information, is less computationally expensive to use in calculations. *See* Spec. ¶¶ 131, 147. Based on the Specification, we agree with Appellant that claim 1’s replacement—of a downstream choice function with a trigger rule—reduces the needed computational demand on the processor, yielding a technical improvement. *See* Appeal Br. 26; Spec. ¶¶ 131–151.

Accordingly, we determine that claim 1 recites additional elements that integrate the underlying abstract idea into a practical application. Memorandum, 84 Fed. Reg. at 54. Because “the exception is so integrated, [] the claim is not directed to a judicial exception (Step 2A: NO) and is eligible.” Memorandum, 84 Fed. Reg. at 54.

We do not sustain the Examiner’s eligibility rejection of independent claim 1, or claims 3–33 which recite similar limitations. *See* Final Act. 2–8.

CONCLUSION

Claims Rejected³	35 U.S.C. §	Basis/Reference(s)	Affirmed	Reversed
1, 3-33	101	Eligibility		1, 3-33

REVERSED

³ As mentioned above, dependent claim 34 is pending and not currently subject to a rejection.

Appeal 2019-000626
Application 13/571,203

MacDONALD, *Administrative Patent Judge*, dissenting.

I dissent from the majority's reversal of the Examiner's 35 U.S.C. § 101 rejection because I agree with the Examiner's determination that the claimed "replacing, by the processor, the downstream choice function within the internal contract representation stored in the memory with a trigger rule" is not an *additional element*. I agree with the Examiner's determination that the limitation is part of the judicial exception. I do not agree that claim 1 recites additional elements that integrate the underlying abstract idea into a practical application.