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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KAREN MCKINNON and STEPHAN HOYER

Appeal 2018-008347
Application 14/640,900
Technology Center 2800

Before BRADLEY R. GARRIS, JEFFREY T. SMITH, and BRIAN D. RANGE, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–22. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

Appellant claims a method (i.e., for using computer systems to provide estimated temperature data to compensate for missing temperature measurement data (Spec. ¶ 1)) comprising: using a server computer to receive climatology records comprising data values representing minimum and maximum temperatures in a plurality of locations; creating and storing

[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 the Climate Corporation. Appeal Br. 1.

in the server computer memory mean fields, based on climatology records, describing climatology values for a plurality of geographical locations; receiving a plurality of different observed temperature measurement values from a plurality of observation posts; creating anomaly field values based on a difference between the temperature values in climatology records and the observed temperature measurements from the plurality of observation posts; using the anomaly field values to generate an anomaly field describing anomaly values for a plurality of geographic locations as a function of distance from the anomaly field values at the observation posts; estimating, based on the mean field and anomaly field, particular temperature values at particular locations that are different than locations of the plurality of observation posts by (1) determining particular mean field values for the particular locations based on the mean field, (2) computing anomaly values for the particular locations based on the anomaly field, and (3) computing the particular temperature values at the particular locations as a difference between the particular mean field values and the particular anomaly values; and substituting the particular temperature values in the memory in place of the data values in the climatology records (independent claim 1). Appellant also claims non-transitory storage media storing instructions which, when executed by computing devices, cause performance of the method steps recited in claim 1 (remaining independent claim 12).

A copy of representative claim 1, taken from the Claims Appendix of the Appeal Brief, appears below.

> 1. A method comprising:
>
> using a server computer, receiving, over a computer network, one or more climatology records each comprising a plurality of data values representing minimum temperatures and

maximum temperatures in a plurality of locations;

creating and storing one or more mean fields in memory of the server computer based on the one or more climatology records, wherein the mean field describes climatology values for a plurality of geographical locations;

receiving, over the computer network, a plurality of different observed temperature measurement values from a plurality of observation posts;

creating one or more anomaly field values in the memory based on a difference between the temperature values in the one or more climatology records and the observed temperature measurements from the plurality of observation posts;

using the one or more anomaly field values, generating an anomaly field, wherein the anomaly field describes anomaly values for a plurality of geographic locations as a function of distance from the anomaly field values at the observation posts;

estimating, based on the mean field and one or more anomaly fields, one or more particular temperature values at one or more particular locations that are different than locations of the plurality of observation posts by:

determining one or more particular mean field values for the one or more particular locations based on the mean field;

computing one or more particular anomaly values for the one or more particular locations based on the anomaly field; and

computing the one or more particular temperature values at the one or more particular locations as a difference between the one or more particular mean field values and the one or more particular anomaly values;

substituting the one or more particular temperature values in the memory in place of one or more of the plurality of data values in the one or more climatology records.

The Examiner rejects claims 1–22 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" (Non-

Final Office Action (Non-Final) 2). According to the Examiner, claims 1–22 are directed to an abstract idea wherein the additional elements recited in the claims are not sufficient to make the claims as a whole amount to significantly more than the abstract idea itself (*id.* at 3–11).

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. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208 (2014). The Supreme Court instructs us to "first determine whether the claims at issue are directed to a patent-ineligible concept" (*id.* at 216–18), and, in this case, the inquiry centers on whether the claims are directed to a judicial exception. 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.* at 217 (*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.'" *Id.* (quoting *Mayo*, 566 U.S. at 72–73).

The USPTO recently published revised guidance on the application of § 101. USPTO's Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019)

("Memorandum"). Under that guidance, we 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); and
> (2) 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, 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.

See Memorandum.

The Memorandum guidance instructs us first to determine whether the claims recite any judicial exception to patent eligibility (i.e., Step 2A, Prong 1). The guidance identifies three judicially-excepted groupings: (1) mathematical concepts; (2) certain methods of organizing human behavior; and (3) mental processes. We focus here on the judicially-excepted grouping of mathematical concepts.

Representative claim 1 recites "creating one or more anomaly field values in the memory based on a difference between the temperature values in the one or more climatology records and the observed temperature

measurements from the plurality of observation posts" from which values an anomaly field is generated.

We determine the recited difference between temperature values in climatology records and observed temperature measurements from the observation posts is derived mathematically and therefore constitutes a mathematical concept. This determination is supported by the plain language of the quoted recitation and by the Specification disclosure of calculating the difference by subtraction (Spec. ¶ 44).

Claim 1 also recites

> estimating, based on the mean field and one or more anomaly fields, one or more particular temperature values at one or more particular locations that are different than locations of the plurality of observation posts by:
>
> determining one or more particular mean field values for the one or more particular locations based on the mean field;
>
> computing one or more particular anomaly values for the one or more particular locations based on the anomaly field; and
>
> computing the one or more particular temperature values at the one or more particular locations as a difference between the one or more particular mean field values and the one or more particular anomaly values.

Similarly to our initial determination above, we determine the recited difference between particular mean field values and particular anomaly values constitutes a mathematical concept because the difference is derived mathematically. As above, the subject determination is supported by the plain language of the quoted recitation (*see also id.*). Further, the recited estimating step is based on probabilistic modeling approaches for calculating estimated particular temperature values at particular locations different from

the observation post locations (*see id.* ¶¶ 47–64). We additionally determine that such calculations constitute mathematical concepts.

Our determination that the previously quoted limitations of claim 1 recite the judicially-excepted grouping of mathematical concepts is supported by *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014) (holding that claims to a "process of organizing information through mathematical correlations" are directed to an abstract idea). *See also* Memorandum, n.12. We observe that the Examiner's abstract idea determination regarding the above quoted and other limitations of claim 1 relies on *Digitech* (Non-Final 5).[2]

Appellant argues "[t]here is no abstract idea 'recited in or described by' the claims" (Appeal Br. 6).

However, the proposition that claim 1 does not recite the judicial exception of mathematical concepts is undermined by our earlier analysis of the quoted claim limitations and Appellant's Specification. Therefore, we maintain our determination that, under Step 2A, Prong 1 of the Memorandum, claim 1 recites the judicial exception of mathematical concepts.

[2] The Examiner's abstract idea determination also appears to rely on the belief that "[t]his abstract idea [of claim 1] is an algorithm which could be carried out as a purely mental process, at least in principle" (*id.*). Appellant persuasively explains that the method steps of the independent claims "are not capable of being performed mentally as they are require [sic] a computer performing interpolation techniques to generate a field of values" (Appeal Br. 7–8). We observe that the Examiner acknowledges but does not disagree with Appellant's explanation (Ans. 5–6).

Having determined that claim 1 recites a judicial exception, we now turn to an analysis under Step 2A, Prong 2 of the Memorandum as to whether there are additional elements that integrate the judicial exception into a practical application. *See* MPEP § 2106.05(a)–(c), (e)–(h) (9th ed., rev. 08.2017 (Jan. 2018)).

Claim 1 recites an additional limitation that focuses on addressing problems in current climatology systems for accurately estimating temperature variables at a granular level (Spec. ¶¶ 4–5). Specifically, claim 1 recites "substituting the one or more particular temperature values in the memory in place of one or more of the plurality of data values in the one or more climatology records." As a result of the quoted limitation, "a computer can deliver estimates of near-surface air temperature that are significantly improved as to granularity . . . [such as] temperature values at a field location level, which otherwise are not available from public and/or commercial temperature data sources" (*id.* ¶ 130).

We conclude that this limitation integrates the recited judicial exception of mathematical concepts into a practical application. That is, the limitation applies the recited mathematical concepts to create significantly improved estimates of temperature values at a granularity including a field location level (*id.*). Current climatology systems lack such information (*id.* ¶ 5). For this reason, the recited mathematical concepts are used to improve meaningfully the technology of accurately estimating temperature variables at a granular level (*id.*) (*see, e.g.*, MPEP § 2106.05(a)(II) ("The courts have also found that improvements in technology beyond computer functionality may demonstrate patent eligibility")).

Ultimately, we conclude that Appellant's claimed invention is integrated into a practical application, and under the guidance provided in the Memorandum, claims 1–22 have not been shown to be patent-ineligible because they are not "directed to" a judicial exception.

We reverse the Examiner's rejection under 35 U.S.C. § 101 of claims 1–22.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–22	101	Eligibility		1–22

REVERSED