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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MELINA MCLARTY, MUHAMMA AHSEN JAFFER, and ANDREY BELOKRYLOV

Appeal 2018-007576
Application 13/873,666
Technology Center 3600

Before KRISTEN L. DROESCH, SCOTT B. HOWARD, and SCOTT E. BAIN, *Administrative Patent Judges*.

DROESCH, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

STATEMENT OF THE CASE

Appellant seeks review under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–17, all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

[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 VMware, Inc. Appeal Br. 3.

BACKGROUND

The disclosed invention relates to a location-aware calendaring system and method that schedules a meeting after receiving a request from a meeting initiator interacting with a device, wherein the request identifies at least a meeting attendee, determines a location of the meeting initiator based on wireless signal strength information, determines a location of the meeting attendee, and then determines a meeting location based on the meeting request and at least the determined location of the meeting initiator and the determined location of the meeting attendee. *See* Spec. ¶ 4, Abstract.

CLAIMED SUBJECT MATTER

Claim 1, which is representative of the subject matter of the appeal and is reproduced from the Claims Appendix of the Appeal Brief, reads as follows:

> 1. A method performed by a computing device for scheduling a meeting, the method comprising:
>
> training a neural network with data developed from trilateration of wireless signal strength information from two or more wireless routers measured at a device while the device is at a known location;
>
> receiving a meeting request from a meeting initiator interacting with the device, wherein the meeting request identifies at least a first meeting attendee;
>
> determining a location of the meeting initiator based on wireless signal strength information of the device, wherein the wireless signal strength information is a received signal strength indicator for a wireless router signal measured at the device, and wherein the neural network, using the wireless signal strength information, provides the determined location of the meeting initiator in a local coordinate system based on received signal strength indications from the two or more wireless routers, wherein the local coordinate system is based on received signal strength indications;

> determining a location of the first meeting attendee;
>
> determining a meeting location based on the meeting request and at least the determined location of the meeting initiator and the determined location of the meeting attendee; and
>
> determining the meeting has finished based on the location of the meeting initiator and the location of the meeting attendee.

REJECTIONS ON APPEAL

Claims 1–17 stand rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter.

Claims 1–6, 8–10, 12–15, and 17 stand rejected under 35 U.S.C. § 103 as unpatentable over Chen et al. (US 2007/0118415 A1, published May 24, 2007, "Chen"), Tran et al. (US 2013/0024029 A1, published Jan. 24, 2013, "Tran"), McAvoy (US 2005/0064879 A1, published Mar. 24, 2005), Chung (US 2011/0158131 A1, published Jun. 30, 2011), and Sridhara et al. (US 2012/0295654 A1, published Nov. 22, 2012, "Sridhara").

Claims 7, 11, and 16 stand rejected under 35 U.S.C. § 103 as unpatentable over Chen, Tran, McAvoy, Chung, Sridhara, and Roebke et al. (US 2011/0141254 A1, published Jun. 16, 2011).

ANALYSIS

REJECTION UNDER 35 U.S.C. § 101

Standard for Patent Eligibility 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. However, the 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. Pty. Ltd. 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 Supreme Court's two-step framework, described in *Mayo* and *Alice*. *Alice*, 573 U.S. at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75-77 (2012)). In accordance with that framework, we first determine what concept the claim is "directed to." *See id.* 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.").

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, 67–68 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as "molding rubber products" (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); "tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores" (*id.* at 183 n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267–68 (1854))); and manufacturing flour *(Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that "[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a

mathematical formula." *Diehr*, 450 U.S. at 187; *see also id.* at 191 ("We view respondents' claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula."). Having said that, the Supreme Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . . is not accorded the protection of our patent laws,[] and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment." *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.").

If the claim is "directed to" an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where "we must examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent eligible application." *Alice*, 573 U.S. at 221. "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* (quoting *Mayo*, 566 U.S. at 77). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention." *Id.*

The PTO recently published revised guidance on the application of § 101. *See* 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (USPTO 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 activities 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) (9th ed. Rev. 08.2017, Jan. 2018)).

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 Guidance, 84 Fed. Reg. at 56.

Examiner's Findings and Conclusion

In the first step of the *Alice* inquiry, the Examiner determines "[t]the claims are directed to using stored completed workflows to guide selection of subsequent steps of a workflow based on similarity in workflows, that are abstract ideas of the type identified as judicial exceptions by the courts, namely an idea of itself or certain methods of organizing human activity." *See* Final Act. 11–12 (citing *Alice*, 573 U.S. 208; *Digitech Image Tech., LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014); *Classen Immunotherapies Inc. v. Biogen IDEC*, 659 F.3d 1057 (Fed. Cir. 2011); *Cybersource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366 (Fed. Cir. 2014); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016). In the Answer, the Examiner clarifies that

> the claims are directed to "using the proximity of participants to create a schedule for business activities to more efficiently use resources to reduce travel, delay, and cost given a particular set of constraints by training data processing steps using stored completed workflows to guide selection of subsequent steps of a workflow based on similarity of workflows" (where the intended augmentation with respect to workflow addresses the limitations added by Appellant's amendment including "training a neural network, see e.g. amended claim set filed 15 October 2015)."

Ans. 4.

In the second step of the *Alice* inquiry, the Examiner determines that the claims include additional elements of a computing device, neural network, and wireless signal strength information from two or more wireless routers, and, in the case of independent claims 9 and 13, a non-transitory computer-readable storage medium comprising instructions, a memory storing and application program, and a processor configured to perform an operation. *See* Final Act. 13; Ans. 4. The Examiner also "interprets 'neural network' to be an information processing paradigm implemented within a computing device." Final Act. 13; *see* Ans. 4. The Examiner determines

> [t]he additional elements are broadly applied to the abstract idea(s) at a high level of generality and the data collection, storage, processing, and transmitting limitations are generic computer functions performed by said generic computer components as routinely used in computer applications such that: (i) the claim merely amounts to the application or instructions to apply the abstract idea on a computer; or (ii) the claim amounts to nothing more than requiring a generic computer to perform generic computer functions that are well understood, routine and conventional activities previously known to the industry.

Final Act. 13–14 (quoting Spec. ¶ 75; citing July 2015 Update: Subject Matter Eligibility Guidance, 80 Fed. Reg. 45429 (USPTO July 30, 2015); *see* Ans. 4 (quoting Spec. ¶ 75), 6, 10. The Examiner also finds,

> [v]iewed as a whole, these additional elements (recited in claims with a judicial exception) do not qualify as significantly more than a claimed judicial exception (e.g., the claims do not: (1) include improvements to another technology or technical field; (2) include improvements to the functioning of a claimed computer itself; (3) apply the judicial exception with, or by use of, a particular machine; (4) effect a transformation or reduction of a particular article to a different state or thing; (5) add a specific limitation other than what is well understood, routine and conventional in the field, or add unconventional steps that confine the claims to a particular useful application; or (6) present other meaningful limitations beyond generally linking the use of the judicial exception to a particular technological environment.

See Final Act. 14. (citing December 2014 Interim Guidance on Patent Subject Matter Eligibility, 79 Fed. Reg. 74618, 74624 (USPTO Dec. 16, 2014)).

In the Answer, the Examiner more specifically determines that "the invention only performs calculations in the computing environment from data gathered outside the scope of the invention by extra solution data gathering, and Appellant provides no additional hardware, code or algorithm to alter the computing environment to improve its processing performance beyond what is routine and conventional in the relevant art or render the computing environment capable of anything more than processing data generally[], and Appellant employs routine and conventional uses of generic computing devices." Ans. 10 (quoting Spec. ¶ 75). The Examiner further determines that

> [t]he generic computing devices each function in the manner a person having ordinary skill in the art would expect them to function, with no unforeseen capability arising out of their combination (e.g. trilateration of signals is well known in the art as a standard functionality of most wireless computing devices even where not expressly stated, as is use of a coordinate system, use of RSSI and the training of a computing system with sets of data) so even in combination the limitations do not provide unconventional steps or technological improvements.

Ans. 10–11. The Examiner also determines that steps such as training a neural network do not change the character of the invention. *See id.* at 11.

Appellant's Arguments

Appellant asserts that "claims 1–17 are directed to scheduling a meeting by, in part using the location of the meeting attendees." Appeal Br. 10, 11. Appellant contends that claims 1–17 provide an improvement to the computing device itself because training a neural network with data developed from trilateration of wireless signals strength information improves the accuracy of location determination of the meeting attendees, which allows a more suitable meeting location to be determined. *See id.* at 11–12; Reply Br. 4. Appellant contends that the claims recite elements that are significantly more than a judicial exception. *See* Appeal Br. 12; Reply Br. 3–4. Appellant argues that training the neural network with specific data from two or more wireless routers compensates for fluctuations in the received signal strength indicators, and is not an activity that can be performed manually and places the claims significantly beyond the abstract idea of organizing human activity. *See* Appeal Br. 12–13. Appellant also argues that a neural network that provides the determined location of the meeting initiator in a local coordinate system based on received signal strength indications from two or more wireless routers, where the local

coordinate system is based on received signal strength indications comprises significantly more than the abstract idea of organizing human activities. *See* Appeal Br. 12; Reply Br. 4–5.

In the Reply Brief, Appellant points out that the Examiner contends that trilateration of signal data is an ordinary function, and contends that the Examiner ignores that claim 1 also recites determining the location of the meeting initiator in a local coordinate system based on received signal strength indications. *See* Reply Br. 4. Appellant contends that this element is not an ordinary function of a computing device. *See id*.

Discussion

Taking into account the Examiner's clarified statement of the abstract idea in the Answer (*see* Ans. 4), and viewing the Examiner's determinations and Appellant's arguments through the lens of the Guidance, one dispositive issue raised by Appellant's arguments is: whether "training a neural network *with data developed from trilateration of a wireless signal strength information from two or more wireless routers measured at a device while the device is at a known location*" and "the neural network, using the wireless signal strength information, *provides the determined location* of the meeting initiator *in a local coordinate system based on the received signal strength indications from the two or more wireless routers, wherein the local coordinate system is based on received signal strength indications*," ("additional limitations") as recited in claim 1, provide significantly more than the judicial exception itself—an inventive concept. Appeal Br. 5–6. This analysis turns on evaluating whether the aforementioned limitations add a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field, 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, 84 Fed. Reg. at 56.

After the Final Office Action was mailed and on the same day the Appeal Brief was filed, the Federal Circuit, addressing step two of the *Mayo/Alice* framework in *Berkheimer*, held that the question of whether a claim element or combination of elements is well-understood, routine, and conventional to a skilled artisan in the relevant field is a question of fact. *Berkheimer*, 881 F.3d at 1368. Shortly after the Federal Circuit issued its decision in *Berkheimer*, and before the Examiner's Answer was mailed, the USPTO issued an April 19, 2018 Memorandum to the Patent Examining Corps entitled, "Changes in Examination Procedure Pertaining to Subject Matter Eligibility, Recent Subject Matter Eligibility Decision (*Berkheimer v. HP, Inc.*)" ("*Berkheimer* Memorandum"), in which the Office revised the procedures set forth in the Manual of Patent Examining Procedure ("MPEP") § 2106.07(a) (Formulating a Rejection For Lack of Subject Matter Eligibility) and MPEP § 2106.07(b) (Evaluating Applicant's Response). *Berkheimer* Memorandum 3–4. According to the *Berkheimer* Memorandum, Examiners must provide specific types of evidence to support a finding that an additional element of a claim is well-understood, routine, and conventional. *Id.* To this end, Examiners must provide one or more of the following: (1) a citation to the Specification or statement made by applicant during prosecution that demonstrates the well-understood, routine, conventional nature of the additional element; (2) a citation to court decisions discussed in MPEP § 2106.05(d)(II) as noting the well-understood, routine, conventional nature of the additional element; (3) a citation to a publication that demonstrates the well-understood, routine, conventional nature of the additional element; and (4) a statement that an examiner is

taking official notice of the well-understood, routine, conventional nature of the additional element. *Id.*

Although the Examiner addresses training a neural network generally, the Examiner does not specifically address "training a neural network with data developed from trilateration of a wireless signal strength information from two or more wireless routers measured at a device while the device is at a known location." *See* Final Act. 4. And as pointed out by Appellant (*see* Reply Br. 4), the Examiner does not address "the neural network, using the wireless signal strength information, provides the determined location of the meeting initiator in a local coordinate system based on the received signal strength indications from the two or more wireless routers, wherein the local coordinate system is based on received signal strength indications." *See* Final Act. 11 (emphasis omitted). At best, the Examiner individually addresses: (1) trilateration of signal data, (2) use of a coordinate system, (3) use of RSSI information, and (4) training a computer with sets of data. Ans. 7, 10–11.

In any event, the Examiner does not provide sufficient factual support for finding "trilateration of signal data is . . . a capability of standard router and generic computing devices processing data and such data is acquired during routine system operation." Ans. 7 (citing Spec. ¶ 75); *see* Ans. 11 (similar argument). Paragraph 75 of Appellant's Specification, cited by the Examiner to support their findings, teaches that the disclosed embodiments may employ various computer implemented operations, including *inter alia* an apparatus specifically constructed for specific required purposes, and a general purpose computer configured by a computer program stored in memory. Paragraph 75 does not address trilateration of received signal strength data, or using a general purpose computer for trilateration of

received signal strength data. The Examiner also does not provide any factual support for finding "use of a coordinate system, use of RSSI information and the training of a computing system with sets of data" are routine and conventional in the relevant art. *See* Ans. 10–11.

Accordingly, based on the record before us, we are constrained to reverse the Examiner's rejection of claim 39, and claims 40–45 dependent therefrom, under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter.

REJECTION UNDER 35 U.S.C. § 103

The Examiner finds that the combination Chen, Tran, McAvoy, Chung, and Sridhara teach each of the limitations of claim 1. *See* Final Act. 15–28. In particular, the Examiner finds that Chen suggests the local coordinate system is based on received signal strength indications (*see* Final Act. 18–19 (citing Chen ¶¶ 30–36)), but does not explicitly teach this limitation (*see* Final Act. 19). The Examiner also finds that Tran suggests the local coordinate system is based on received signal strength indications (*see* Final Act. 21 (citing Tran ¶¶ 117–118)), but does not explicitly teach this limitation (*see* Final Act. 23). The Examiner further finds that McAvoy teaches the local coordinate system and suggests the local coordinate system is based on received signal strength indications (*see* Final Act. 24 (citing McAvoy ¶¶ 66, 137–139)), but does not explicitly teach this limitation (*see* Final Act. 24). Finally the Examiner finds that Sridhara teaches a local coordinate system based on received signal strength indications. *See* Final Act. 24–25 (citing Sridhara ¶¶ 72–73).

Appellant argues that Sridhara does not teach or suggest "the local coordinate system is based on the received signal strength indications" because, although Sridhara may use a local coordinate system, there is no

teaching or suggestion that this coordinate system itself is mapped using RSSI information. *See* Appeal Br. 14 (citing Spec. ¶¶ 23, 66–67, 72); Reply Br. 5–6.

Appellant's arguments are not persuasive of error in the Examiner's rejection because they are not commensurate in scope with the claim limitations. Claim 1 does not recite or require the local coordinate system to be mapped using RSSI information. Claim 1 merely requires that "the local coordinate system is *based on* the received signal strength indications." Nor does claim 1 require the local coordinate system to be based entirely on the received signal strength indications, as suggested by Appellant. Sridhara teaches: (1) Local Area Network Wireless Access Points (LAN-WAPs) may be used as an independent source of location data; (2) Location Configuration Information that includes a pointer to the mobile device's position in a local coordinate system; and (3) the mobile device may measure the signal strength of messages received from access points and data regarding the signal strength at the origin or access point to compute RSSI for those messages, determine approximate distances to the access points, and determine from that an approximate location of the mobile devices. *See* Sridhara ¶¶ 72–73. Accordingly, Sridhara teaches that the local coordinate system is based on received signal strength information relative *and* location data for access points or LAN-WAPs.

For the foregoing reasons, we are not persuaded of error in the rejection of claim 1 under 35 U.S.C. § 103. Appellant does not present separate substantive arguments addressing independent claims 9 and 13, and dependent claims 2–8, 10–12, and 14–17. *See* Appeal Br. 15; Reply Br. 6. Accordingly, for the same reasons as those explained above with respect to

claim 1, we are not persuaded of error in the rejections of claims 2–8, 10–12, and 14–17 under 35 U.S.C. § 103.

CONCLUSION

In summary:

Claims Rejected	Basis	Affirmed	Reversed
1–17	§ 101		1–17
1–17	§ 103	1–17	
Outcome		1–17	

TIME PERIOD

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