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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JASON MEYER, SHIQI QIU, FLING TSENG, and
SANGEETHA SANGAMESWARAN¹

Appeal 2017-010112
Application 14/464,293
Technology Center 3600

Before BRETT C. MARTIN, MICHELLE R. OSINSKI, AND
PAUL J. KORNICZKY, *Administrative Patent Judges*.

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

Opinion Dissenting-in-Part filed by *Administrative Patent Judge* OSINSKI.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant appeals from the Examiner's decision to reject claims 1–19. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ The real party in interest is Ford Global Technologies, LLC. App. Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed “to battery-powered vehicle powertrain control systems.” Spec. ¶ 1. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A distance indicator system for a vehicle comprising:
a display configured to display an available driving distance;
and a controller programmed to output to the display the available driving distance that is based on an expected energy consumption rate and an expected driving distance each corresponding to a day of the week of a current drive cycle and derived from a weighted function of previous drive cycle data.

App. Br. 13 (Claims Appendix).

REFERENCES

The prior art relied upon by the Examiner is:

Watanabe	US 2004/0080434 A1	Apr. 29, 2004
Zuta	US 2007/0262855 A1	Nov. 15, 2007
Pandit	US 2011/0087390 A1	Apr. 14, 2011
Wang	US 2013/0073113 A1	Mar. 21, 2013
Mori	US 2014/0336965 A1	Nov. 13, 2014

REJECTIONS

Claims 1–11 and 16–19 stand rejected under 35 U.S.C. § 101. Final Act. 6.

Claims 7, 9, 11, and 18 stand rejected under 35 U.S.C. § 102(a)(1) as being anticipated by Wang. Final Act. 7.

Claims 1–3, 6, and 16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Wang, Zuta, and Watanabe. Final Act. 9.

Claims 4 and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over Wang, Zuta, Watanabe, and Pandit. Final Act. 12.

Claim 8 stands rejected under 35 U.S.C. § 103 as being unpatentable over Wang and Zuta. Final Act. 14.

Claim 10 stands rejected under 35 U.S.C. § 103 as being unpatentable over Wang. Final Act. 15.

Claims 12–15 and 19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Wang and Mori. *Id.*

Claim 17 stands rejected under 35 U.S.C. § 103 as being unpatentable over Wang, Zuta, Watanabe, and Mori. Final Act. 17.

OPINION

Patent-Eligible Subject Matter

Standard for Patent Eligibility

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. 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 an abstract idea. 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 January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* (“Memorandum”). Under that 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 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.

Examiner’s Findings and Conclusion

The Examiner rejects claims 1–11 and 16–19 as not directed to patentable subject matter and identifies the alleged abstract idea as “an

available driving distance based on an expected energy consumption rate and an expected driving distance each corresponding to the day of the week of the current drive cycle.” Final Act. 6. The Examiner then concludes that the claims “amount to no more than a generic computer performing generic computer functions that are well understood, routine and conventional activities.” *Id.*

Appellant’s Contentions

Appellant contends that “[t]he claim recites a very specific way of determining the available driving distance” that “does not in any way ‘tie up’ any mathematical relationship.” Br. 5. Appellant is correct. Appellant’s method relies on two factors. First, it relies on expected energy consumption and then also expected driving distance based upon the day of the week. In this manner, the method does not simply calculate based on some average expected distance, but specifically looks at expected distance based on the day of the week to determine a more focused available driving distance. As they further note, “[c]laim 1 further requires that the available driving distance is *derived from a weighted function of previous drive cycle data.*” *Id.* This alone is sufficient to overcome the Examiner’s rejection in that the claims require further data manipulation to achieve a result that is narrower than the alleged abstract idea. There could be many ways to calculate an expected driving distance, but the method chooses to base the ultimate determination upon previous drive cycle data. As such, Appellant is correct that the claims do not tie up a mathematical relationship, but picks

and chooses from a multitude of factors that could result in differing outcomes.

Further, the Examiner appears to equate any calculation with a mathematical relationship. Although a calculation is involved in the method, the method goes beyond a generic calculation and, again, picks and chooses from many different factors that could be used to determine an available driving distance. Ultimately, the calculation goes further than an abstract idea because it is specific to calculating remaining driving distance and does so in a specific way that does not tie up the alleged abstract idea. Accordingly, we do not sustain this rejection.

Wang

All of the prior art rejections rely on Wang either alone or in combination with other references. Appellant focuses on alleged deficiencies in Wang and Mori, but does not argue any of the secondary references. Accordingly, our decision rests on whether the Examiner has properly applied Wang and Mori in rejecting the claims.

First, regarding claim 7, Appellant argues that Wang is defective because it “does not teach a *weighted function of previous drive cycle data* as claimed.” Br. 6. Appellant alleges that this is so because “[t]he weighting factor of Wang is applied after any previous drive cycle data is evaluated.” *Id.* Appellant also argues that Wang’s calculations “are associated with future driving patterns, not *previous drive cycle data* as claimed.” *Id.* at 7. As the Examiner points out, however, although some quantities are associated with future driving patterns, other quantities “are the average efficiencies *previously* observed for each respective pattern” in that they are derived by running an actual vehicle test, which amounts to a

previous drive cycle. Ans. 5. As to the timing of the weighing, the Examiner is correct that “the claim requires the function to be weighted, not the drive cycle data.” Ans. 4. As such, Appellant’s argument is inapposite.

As to claim 12, Appellant argues that “the combination of Wang and Mori does not teach or suggest that the *energy consumption data is weighted such that more recent values have greater weight* as claimed.” Br. 10. As the Examiner points out, however, Wang teaches “weighted energy consumption data” and Mori “teaches a ‘forgetting factor’ which weights recent values more heavily than older values and does so for the purpose of preventing the influence of accidentally generated data from having long-lasting effects.” Ans. 8 (citing Mori ¶ 59). The Examiner concludes that it would have been obvious to modify Wang “by weighting more recent values with a greater weight in order to prevent accidentally generated/erroneous data from having long-lasting effects as taught by Mori.” Ans. 8–9. We agree with the Examiner that Mori sufficiently discloses providing greater weight to more recent values. Appellant also argues that “charging/discharging from the charge/discharge device of Mori does not take place during a drive cycle as defined by the present invention.” Br. 10. The Examiner, however, does not use Mori for this feature, but finds it in Wang. Ans. 9. Thus, Appellant’s argument is inapposite. Appellant similarly argues the deficiency of the combination by pointing out features of the combination that are not present in Mori when, again, the Examiner has utilized Wang for the allegedly deficient features. Accordingly, we sustain the rejection of claim 12.

As for the remaining independent claims, Appellant merely restates the same arguments made with respect to claim 7, which we already have

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rejected above. Appellant makes no specific arguments as to any of the secondary references. Accordingly, we sustain the Examiner's prior art rejections of claims 1–19.

DECISION

The Examiner's rejections are **AFFIRMED**.

More specifically, we **REVERSE** the Examiner's § 101 rejection and **AFFIRM** all of the prior art rejections.

FINALITY AND RESPONSE

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

AFFIRMED

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JASON MEYER, SHIQI QIU, FLING TSENG, AND
SANGEETHA SANGAMESWARAN

Appeal 2017-010112
Application 14/464,293
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Before BRETT C. MARTIN, MICHELLE R. OSINSKI, AND
PAUL J. KORNICZKY, *Administrative Patent Judges*.

OSINSKI, *Administrative Patent Judge*, dissenting-in-part.

I respectfully dissent from the majority's decision to reverse the Examiner's rejection of claims 1–11 and 16–19 under 35 U.S.C. § 101. The Examiner determines that the output recited in independent claim 1 “amounts to a mathematical relationship.” Final Act. 6. The output is the “available driving distance that is based on an expected energy consumption rate and an expected driving distance each corresponding to a day of the week of a current drive cycle and derived from a weighted function of previous drive cycle data.” Br. 13 (Claims App.). I agree with the Examiner that such a limitation pertains to a mathematical relationship at least in that it describes that the expected energy consumption rate and expected driving distance are derived from a weighted function of previous data, and a weighted function is a mathematical device used to give some elements

more “weight” or influence on the result than other elements in a same set. The Federal Circuit has identified mathematical concepts as representing abstract ideas. *See, e.g., SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1163 (Fed. Cir. 2018) (holding that claims to a “series of mathematical calculations based on selected information” are directed to abstract ideas); *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). I therefore view claim 1 as reciting a mathematical relationship as identified in the Revised Guidance, and thus, an abstract idea.

Having found that claim 1 recites a judicial exception, namely, a mathematical relationship, the Office guidance instructs the next step is a determination whether the claim recites “additional elements that integrate the exception into a practical application” (see MPEP §§ 2106.05(a)–(c), (e)–(h)). *See* Memorandum.

Claim 1 recites “a display configured to display an available driving distance” and “a controller programmed to output to the display” the above-referenced limitation that recites the mathematical relationship. The display is recited at a high level of generality, i.e., as a generic display performing a generic display function of being able to display output. The controller is also recited at a high level of generality, i.e., as a generic controller capable of outputting certain information to the display. The recitation of a display and a controller programmed to output to the display does not integrate the abstract idea into a practical application. More particularly, the claim stops at the controller being programmed to output to the display and does not recite that the particular output is actually displayed. Thus, the additional

elements do not actually recite a specific manner of using the output in a system that provides a specific improvement over prior systems, resulting in an improved system. Instead, the generic limitations are no more than instructions to apply the judicial exception (i.e., a mathematical relationship) using generic computer elements. The generic “display” and “controller” limitations do not integrate the abstract idea into a practical application because they do not impose any meaningful limits on practicing the abstract idea. *See* MPEP § 2106.05(f) (“Use of a computer or other machinery in its ordinary capacity for . . . tasks (e.g., to receive, store, or transmit data) or simply adding a general purpose computer or computer components after the fact to an abstract idea . . . does not provide significantly more.”).

I have considered Appellant’s argument that the “very specific way of determining the available driving distance” set forth in the claims “does not in any way ‘tie up’ any mathematical relationships.” Br. 5. I have also considered Appellant’s arguments that if claim 25 does not monopolize or preempt an abstract idea, it is patent-eligible. *Id.* at 10–13. Although preemption is a necessary clue for patent eligibility, it is not sufficient for patent eligibility. *See Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715–16 (Fed. Cir. 2014) (explaining that the court did not agree with Ultramercial “that the addition of merely novel or non-routine components to the claimed idea necessarily turns an abstraction into something concrete”). As the *McRO* court explicitly recognized, “the absence of complete preemption does not demonstrate patent eligibility.” *See McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1315 (Fed. Cir. 2016) (quoting *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015)). “Where a patent’s claims are deemed only to disclose patent ineligible

subject matter” under the *Alice/Mayo* framework, “preemption concerns are fully addressed and made moot.” *Ariosa*, 788 F.3d at 1379; *see also OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) (“[T]hat the claims do not preempt all price optimization or may be limited to price optimization in the e-commerce setting do not make them any less abstract.”).

In short, the additional elements of a display and a controller programmed to output to the display (1) do not improve the functioning of a computer or other technology, (2) are not applied with any particular machine, (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. *See* MPEP §§ 2106.05(a)–(c), (e)–(h). Consequently, the claimed invention does not integrate the abstract idea into a “practical application,” as that phrase is used in the Revised Guidance.

The next consideration is whether claim 1 recites any elements, individually or as an ordered combination, that transform the abstract idea into a patent-eligible application, e.g., by providing an inventive concept. *Alice*, 573 U.S. at 217–18. The Examiner determines that:

[t]he remaining elements of the claim are a controller programmed to store data and output the available driving distance via a display. Viewed as a whole, these elements amount to no more than a generic computer performing generic computer functions that are well understood, routine and conventional activities previously known to the industry and are not enough to qualify as “significantly more” than the abstract idea.

Final Act. 6.

I agree with the Examiner. The display and controller of claim 1 are invoked as conventional tools. The display is recited for its generic function of displaying output. The controller is similarly recited for its generic function of executing program instructions and operations. Apart from being instructed to display output corresponding to the mathematical relationship discussed above, the controller only serves to perform well-understood functions (e.g., receiving and analyzing data). *See, e.g., Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016) (“[T]he claims’ invocation of computers, networks, and displays does not transform the claimed subject matter into patent-eligible applications. The claims at issue do not require any nonconventional computer, network, or display components, or even a ‘non-conventional and non-generic arrangement of known, conventional pieces,’ but merely call for performance of the claimed information collection, analysis, and display functions ‘on a set of generic computer components’ and display devices. *Bascom [Global Internet Servs., Inc. v. AT&T Mobility, LLC]*, 827 F.3d [1341,] 1349–52 [Fed. Cir. 2016].”).

In my view, claim 1 fails to add a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field, but instead “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. That is, Appellant has not persuaded me that claim 1 is directed to a specific application designed to achieve an improved technological result, as opposed to being directed to merely ordinary functionality of a display and controller to apply an abstract idea. The invocation of a “display” and a “controller” is

insufficient to transform the abstract idea into a patent-eligible application. For the reasons discussed above, I find no element or combination of elements recited in claim 1 that contains any “inventive concept” or adds anything “significantly more” to transform the abstract concept into a patent-eligible application. *Alice*, 573 U.S. at 221.

Appellant also argues that “the claims include additional features that are significantly more than the abstract idea. For example, each of the claims includes the feature that the distance is *derived from a weighted function of previous drive cycle data.*” Br. 5. This argument is unpersuasive in that Appellant points only to the identified judicial exception of a mathematical relationship, whereas this step is a search for an element or combination of elements that ensures that the claim is *more* than the ineligible mathematical relationship.

Accordingly, I would sustain the Examiner’s decision to reject claim 1 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. I would also sustain the Examiner’s decision to reject claims 2–11 and 16–19 as falling with independent claim 1 based on Appellant’s decision to argue these claims as a group. *See* 37 C.F.R. § 41.37(c)(1)(iv); Br. 4–5.