UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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Ex parte STEPHEN FORREST ROGOFF and LEROY ERNEST VETSCH
_____

Appeal 2018-006372
Application 13/648,581
Technology Center 2800
_____

Before JEFFREY T. SMITH, MICHAEL P. COLAIANNI, and
BRIAN D. RANGE, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] appeals under 35 U.S.C. § 134(a) from the Examiner's decision finally rejecting claims 1 to 3, 5, and 7 to 20 under 35 U.S.C. § 101 as directed to patent ineligible subject matter. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We REVERSE.

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[1] Appellant identifies Honeywell International Inc. as the real party in interest (Appeal Br. 1).

STATEMENT OF THE CASE

The invention relates to a system and a method of using a plurality of sensors and a processing unit to compare rates of change between sensor data and determine whether filtering of the sensor output is required (Claims 1, 13; Spec. ¶ 4).

Independent claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the subject matter on appeal.

> 1. A system comprising:
> a plurality of sensors configured to measure a common physical parameter and generate sensor data based on measurement of the common physical parameter;
> a processing unit communicatively coupled to the plurality of sensors and configured to receive the sensor data based on the measurement of the common physical parameter from each of the plurality of sensors;
> wherein the processing unit is further configured to compare a rate of change of sensor data for each individual sensor of the plurality of sensors with rates of change of sensor data for each of the other individual sensors of the plurality of sensors, wherein the rates of change of sensor data for each individual sensor are calculated during a common time period;
> wherein the processing unit is further configured to output at least one of unfiltered sensor data and first filtered sensor data based on sensor data from at least one of the plurality of sensors when the rate of change of sensor data for each of the plurality of sensors is within a first threshold of the rate of change of sensor data for all of the other plurality of sensors indicating that changes in the sensor data are more likely actual changes in the common physical parameter;
> wherein the processing unit is further configured to output second filtered sensor data based on sensor data from at least one of the plurality of sensors when the rate of change of sensor data for at least one of the plurality of sensors is not within the first threshold of the rate of change of sensor data for

at least another of the plurality of sensors indicating that
changes in the sensor data are more likely noise in the output of
the at least one of the plurality of sensors;
        wherein the unfiltered sensor data responds more quickly
to actual changes in the common physical parameter than the
second filtered sensor data;
        wherein the first filtered sensor data is filtered less than
the second filtered sensor data and responds more quickly to
actual changes in the common physical parameter than
the second filtered sensor data; and
        wherein the second filtered sensor data includes
minimized noise in the output of the at least one of the plurality
of sensors compared to the at least one of the unfiltered
sensor data and the first filtered sensor data.

The Examiner maintains the rejection of claims 1 to 3, 5, and 7 to 20
under 35 U.S.C. § 101 as being directed to patent ineligible subject matter.
The Examiner's findings and conclusions regarding the § 101 rejection are
located on pages 5 to 9 of the Final Action.

The Examiner determines that claims 1, 13, and 20 are directed to the
abstract idea of "comparing the rate of change of one sensor with other
sensors and performing certain action if the rate of change is within/not
within a threshold" (Final Act. 5, 7–8 emphasis omitted). The Examiner
finds that the abstract idea in claims 1, 13, and 20 amounts to collecting
information, analyzing it, and displaying certain results of the collection and
analysis (Final Act. 6, 8). The Examiner finds that the facts presented in
Classen Immunotherapies, Inc. v. Biogen, IDEC, 659 F.3d 1057 (Fed. Cir.
2011) and *Electric Power Group LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed.
Cir. 2016) comport with the facts presented in this appeal (Final Act. 6, 8).
The Examiner finds that the additional claim limitations to sensors are
generic devices that are well-known in the art (Final Act. 6, 8). The

Examiner finds that the additional elements do not amount to significantly more than the abstract idea itself (Final Act. 7, 9).

Appellant argues that the Examiner's analysis is not consistent with the current state of the law for subject matter eligibility under 35 U.S.C. § 101 (Appeal Br. 6). Appellant argues that unlike the facts in *Electric Power Group* or *Classen*, the invention generates information using a number of sensors and a protocol for determining whether and how much filtering should be applied to the output of the sensors to strike a balance between response time and reduction in noise in generating the information (Appeal Br. 8). Appellant contends that the present claims are directed to an improvement in sensor technology (Appeal Br. 8). Specifically, Appellant argues that the system improves the information that is generated by a group of sensors (Appeal Br. 8). Appellant contends that the claims are not directed to an abstract idea because they are an improvement in sensor technology (Appeal Br. 8). Appellant argues that the Specification discloses how the invention recited in the claims improves sensor technology (Appeal Br. 13). Specifically, Appellant contends that paragraphs 2, 3, 15 to 19, and 22 describe the problems with the state of the art sensor technology and improvements to the sensor technology based upon the filtering the sensor output as recited in the claims (Appeal Br. 13). Appellant argues that the claims specify a particular configuration of sensors (with conditional logic and filtering) that improves the responsiveness and impact of noise on the sensor system (Appeal Br. 17).

STATEMENT OF LAW

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*. *Id.* 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 Alice*, 573 U.S. 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, 69 (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 182 n.7 (quoting *Corning v. Burden*, 56 U.S.

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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 176; *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 (citation and quotation marks omitted). "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.*

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The PTO 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 interactions 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 Memorandum.

OPINION

In the present case, we agree with the Examiner that claims 1, 13, and
20 recite an abstract idea that involves mathematical concepts vis-a-vis the
programming/software that is part of the processing unit. Specifically, the

recitation that the processing unit is configured to compare a rate of change of sensor data for each individual sensor of the plurality of sensors with the rate of change sensor data for each of the other individual sensors of the plurality of sensors and determining whether to filter or not the output of the sensors based on the comparison amounts to a mathematical concept in the invention. The claims in our view recite an abstract idea.

We now determine whether the additional elements in the claims integrate the judicial exception into a practical application. We find that claims 1, 13, and 20 integrate the comparative algorithm into a practical application. Specifically, claims 1, 13, and 20 include the sensors that are coupled with the processing unit to determine whether to filter the output of the sensors. Claim 1 recites that the noise in the output of the sensor is minimized as compared to unfiltered sensor data. Method claim 13 recites outputting the sensor data. Claim 20 recites a system where noise in the filtered output is minimized. In other words, the sensor data is output and further used in some manner. The Specification discloses that the sensors may be a variety of sensors used in a variety of applications, including sensors used on aircraft, on space vehicles, in systems worn by individuals, in buildings, or used in manufacturing processes (Spec. ¶ 12). The sensors may be pressure sensors, temperature sensors, velocity sensors, accelerometers, altitude sensors, distance sensors, or gyroscopes among others (Spec. ¶ 14).

As Appellant argues (Appeal Br. 8), the present claims are distinguishable from, for example, those of *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016), because the claims here provide an improvement to sensor technology. The present claims are

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necessarily rooted in sensor technology and seek to overcome problems specifically arising in the realm of sensors. *See* Spec. ¶ 2 ("known systems are only able to achieve a compromised level of noise reduction and response time."). The present claims are, therefore, analogous to, for example, the claims our reviewing court held patent eligible in *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014) (holding claims patent eligible where they were "necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks").

Based on the language in the claims as understood in light of the Specification, we find that the system of claims 1 and 20 and method of claim 13 are integrated into a practical application. Therefore, based upon applicable law and consistent with the *2019 Revised Patent Subject Matter Eligibility Guidance*, we determine that the claims satisfy 35 U.S.C. § 101. We reverse the Examiner's § 101 rejection.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 5, 7–20	101	Eligibility		1–3, 5, 7–20

REVERSED