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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JINDRICH DUNIK and JAN LUKAS

Appeal 2018-001612
Application 13/242,701
Technology Center 2800

Before DONNA M. PRAISS, N. WHITNEY WILSON, and MICHELLE N. ANKENBRAND, *Administrative Patent Judges*.

PRAISS, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

Appellants[2] appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1 and 9–20 as anticipated and/or obvious over cited prior art references, as well as for being directed to patent-ineligible subject matter. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

[1] Our Decision refers to the Specification ("Spec.") filed Sept. 23, 2011, the Examiner's Final Office Action ("Final") dated July 29, 2016, Appellants' Appeal Brief ("Appeal Br.") filed Apr. 3, 2017 as corrected June 2, 2017, the Examiner's Answer ("Ans.") dated Sept. 29, 2017, and Appellants' Reply Brief ("Reply Br.") filed Nov. 29, 2017.

[2] Appellants identify Honeywell International Inc. as the real party in interest. Appeal Br. 1.

STATEMENT OF THE CASE

The invention relates to determining the movement and position of other objects or of an electronic sensor. Spec. ¶ 5. Appellants describe analyzing plane similarity using a statistical function known as divergence. *Id.* ¶ 27. According to Appellants, divergence measures the distance between two different probability distributions. *Id.* Planes in two separate frames of data are represented as probabilistic distributions of points and a statistical distance between the two planes can be determined with a divergence calculation. *Id.* If the divergence calculation is low enough, the planes can be said to represent the same plane. *Id.* Using divergence to compare probability distributions is said to be theoretically justified and assessable in safety critical systems. *Id.*

Claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the subject matter on appeal (emphasis added).

> 1. A system for determining plane similarity, the system comprising:
>
> a sensor configured to acquire a plurality of frames of data; and
>
> a processing unit coupled to the sensor, the processing unit configured to process
>
> the plurality of frames of data, wherein the processing unit is further configured to
>
> store the plurality of frames of data on at least one memory device;
>
> read a first frame of data from the plurality of frames stored on the at least one memory device;
>
> read a second frame of data from the plurality of frames stored on the at least one memory device;
>
> extract a first plane from the first frame of data;

> extract a second plane from the second frame of data; and
>
> *calculate a divergence to measure a similarity between the first plane and the second plane, wherein the divergence determines a statistical distance between probability distribution representations of the first plane and the second plane*, wherein the probability distribution representations of the first plane and the second plane represent probability distributions of points comprised in the first plane and the second plane, the points characterized by normal vectors and orthogonal distance that are respectively acquired from the extracted first plane and the extracted second plane.

Independent claim 9 recites a processing device comprising a sensor and a processing unit wherein the processing unit is configured to extract a first plane set and a second plane set from a first and second frame in a plurality of frames of data acquired by the sensor, and it is also configured to "identify a transformation hypothesis" and "create a transformed plane by applying the transformation hypothesis to a first plane in the first plane set" so that a divergence value is determined by applying a divergence formula to the transformed plane and a second plane in the second plane set.

Independent claim 16 recites a system comprising a processor coupled to a sensor and at least one data storage device having stored thereon a first plane set and a second plane set "wherein the processor forms a first merged plane set from the first plane set and a second merged plane set from the second plane set by applying a primary merge algorithm" and "the processor applies a transformation hypothesis to a first plane in the first merged plane set." The processor also "calculates a divergence value between the transformed first plane and a second plane in the second merged plane set" to determine a "statistical distance between probability distribution representations of the first plane and the second plane."

ANALYSIS

We review the appealed rejections for error based upon the issues Appellants identify, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) *cited with approval in In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) ("[I]t has long been the Board's practice to require an applicant to identify the alleged error in the examiner's rejections.")). After considering the argued claims in light of the case law presented in this Appeal and each of Appellants' arguments, we are not persuaded of reversible error in the Examiner's rejections.

Rejection 1: Patent Eligible Subject Matter

The Examiner rejects claims 1 and 9–20 under 35 U.S.C. § 101 as being patent ineligible because they are directed to mathematical concepts, which is an abstract idea and a judicial exception to patentable subject matter. Final 2. The Examiner further finds that the claims do not include additional elements sufficient to amount to significantly more than the judicial exception because they add only data collection and general computer functions. *Id.* at 2–3.

Appellants do not separately argue the patentability of claims 9–20. App. Br. 9. Therefore, claims 9–20 stand or fall with independent claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv). Appellants contend that the Examiner erred in rejecting claim 1 because the Examiner does not identify the abstract idea to which the claim is directed. App. Br. 7. Appellants additionally contend that the sensor is an integral element of claim 1, making claim 1 significantly more than an abstract idea itself because it is not merely performing conventional activities previously known to the pertinent industry. *Id.* at 8. According to Appellants, the "divergence determining statistical distance between probability distribution representations of the first plane and the second plane acquired by the sensor as recited in claim 1 enable[s] a more accurate determination of the movement and position of the sensor than conventional systems." *Id.*

In the Reply Brief, Appellants contend that claim 1 is not abstract because "the claim recites an improvement that allows a sensor, e.g. for safety critical applications, to determine that movement and evaluation of the movement of the sensor or other objects are theoretically justified and assessable." Reply Br. 1–2 (citing Spec. ¶¶ 5–6, 27; *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1315 (Fed. Cir. 2016)). Appellants additionally assert that the Examiner failed to consider the claim as a whole, but, rather, discussed only the sensor, processing unit, and at least one memory device. *Id.* at 3 (citing Ans. 5–6).

We are not persuaded by Appellants' arguments. Our reasons follow.

Legal Framework

An invention is patent eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. 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. 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 mathematical formulas. *E.g.*, *Parker v. Flook*, 437 U.S. 584, 594–95 (1978). However, not every claim that recites a mathematical formula is patent ineligible. In *Diamond v. Diehr*, 450 U.S. 175, 191 (1981), 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."). 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 *Flook* and *Gottschalk v. Benson*, 409 U.S. 63, 69 (1972)); *see also, 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 found to be “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 (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.*

The USPTO recently published revised guidance on the application of § 101. *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Guidance”). Under Step 1 of the Guidance, we determine whether the claimed subject matter falls within the four statutory categories: process, machine, manufacture, or composition of matter. Step 2A of the Guidance is two-pronged, under which 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 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)).

See Guidance 54–55. Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then, under Step 2B of the Guidance, 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 56.

Claim Construction

Because there is a dispute over what claim 1 is directed to, we begin our analysis with a claim construction. *Accenture Glob. Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1345 (Fed. Cir. 2013) ("[T]he important inquiry for a § 101 analysis is to look to the claim."). We construe the claim as a whole giving it the broadest reasonable construction as one of ordinary skill in the art would have interpreted it in light of the Specification at the time of filing. Guidance 53 n.14 ("If a claim, under its *broadest reasonable interpretation* . . . ." (emphasis added)).

Claim 1 calls for a "system" comprising a "sensor" and a "processing unit" as discussed in detail below. The system as claimed nominally involves five data or information components: (1) "a plurality of frames of data" (INFORMATION A); (2) "a first frame of data" (INFORMATION A1); (3) "a second frame of data" (INFORMATION A2); (4) "a first plane" (INFORMATION B1); and (5) "a second plane" (INFORMATION B2). Thus, the information involved in the system of claim 1 can be separated from the other elements of the claim as follows:

1. A system for determining plane similarity, the system comprising:

a sensor configured to acquire [INFORMATION A]; and

a processing unit coupled to the sensor, the processing unit configured to process [INFORMATION A], wherein the processing unit is further configured to

store [INFORMATION A] on at least one memory device;

read [INFORMATION A1] from [INFORMATION A] stored on the at least one memory device;

read [INFORMATION A2] from [INFORMATION A] stored on the at least one memory device;

extract [INFORMATION B1] from [INFORMATION A1];

extract [INFORMATION B2] from [INFORMATION A2]; and

calculate a divergence to measure a similarity between [INFORMATION B1] and [INFORMATION B2],

wherein the divergence determines a statistical distance between probability distribution representations of [INFORMATION B1] and [INFORMATION B2],

wherein the probability distribution representations of [INFORMATION B1] and [INFORMATION B2] represent probability distributions of points comprised in the [INFORMATION B1] and [INFORMATION B2],

the points characterized by normal vectors and orthogonal distance that are respectively acquired from [INFORMATION B1] and [INFORMATION B2].

According to the Specification, stored data is grouped according to the data's associated frame of sensor-captured data (Spec. ¶ 28) or, alternatively, the sensor captures two- or three-dimensional data frames (*id.* ¶ 29). The data is not limited to rectangular coordinates, but may be in spherical coordinates (i.e. a horizontal angle, a vertical angle, and a distance). *Id.* ¶ 37. The Specification discloses that plane extraction is performed on sets of data a sensor captures in order to evaluate plane similarity using divergence, however, when three-dimensional data is gathered, it may be by a sensor or by combining data from multiple two-dimensional sensors. *Id.* ¶ 34. A planar feature is extracted from the data and is made up of a set of points (referred to as inlier data points because they are statistically consistent with points that would likely be found within the plane) from which normal vector and orthogonal distance estimates are calculated. *Id.* ¶¶ 35–36.

Processing time of the plane extraction is said to be improved by dividing the data into cells and processing the cells in parallel with separate processors. *Id.* ¶ 41. However, this is optional, and the entire data-set of data the sensor captures can be processed as a single cell. *Id.*

The claim as a whole is not limited to any particular system, field, or application, including safety-critical applications, but, rather, "improved systems and methods for theoretically justified transformation hypotheses" generally (Spec. ¶ 6) of which the Specification provides "safety critical systems" as one example (*id.* ¶ 27). Similarly, the recited "sensor" is not limited to any particular system, field, or application, including safety-critical applications, as the Specification indicates that it was known in the art to use electronic sensors to determine the movement and position of other objects or of the sensor (*id.* ¶ 5). The Specification describes the sensor itself as a generic "sensor" in some embodiments (*id.* ¶ 28). In other embodiments, sensor examples include a camera, a 3D scanning or flash LiDAR camera, a 3D scanning rotating LiDAR, a radar sensor (such as a millimeter wave radar or weather radar), a combination of radar and an electro-optical camera, or other combinations of sensors, sonar sensors, laser or radar altimeters, or sensors used for surveying methods, bathymetry, radar topography, structure from motion methods or interferometry (Spec. ¶ 29).

According to the Specification, the "processing unit" can be a general purpose computer and any form of physical computer data storage hardware can be used to implement the system. Spec. ¶ 133. Claim 1 provides that the "processing unit is coupled to the sensor" and that it processes "the plurality of frames of data" the sensor acquires, but does not indicate how the results of the processed data are used. Thus, the recitations in claim 1 do not limit the claim to any particular sensor, any particular processing unit, or any particular application in which the processed data is used. Having construed the claim, we turn to our analysis of Appellants' arguments under the legal framework.

Statutory Category

We find, under Step 1 of the Guidance, that the subject matter of claim 1 falls within the machine or manufacture statutory categories (i.e., a system comprising a sensor coupled to a processing unit). App. Br. 20–24 (Claims Appendix); Ans. 4. Although each of these claims falls within one of the four categories of invention recited in the statute, this finding does not end our inquiry. We turn next to Step 2A, prong 1 of the Guidance to evaluate whether claim 1 recites a judicial exception.

Judicial Exception

Under Step 2A of the Guidance, we agree with the Examiner's finding that claim 1 recites a judicial exception in the form of mathematical concepts (i.e., extracting a first plane from the first frame of data, extracting a second plane from the second frame of data, and calculating a divergence to measure a similarity between the first plane and the second plane). Ans. 4–

5; Final 2; *cf.* App. Br. 7. The recited system collects data in the form of frames of data and processes the data to extract a first plane and a second plane to calculate a divergence to measure a similarity between a first plane and a second plane, wherein a statistical distance between probability distribution representations of the first plane and the second plane is determined. Extracting a first plane from the first frame of data, extracting a second plane from the second frame of data, and calculating divergence to measure a similarity between the first plane and the second plane, as claim 1 requires, all involve mathematical formulas. Final 2; Ans. 5 (citing e.g., Spec. ¶¶ 34–36, 49, 65–66); *see* Spec. ¶ 27 ("Divergence is a statistical function that measures the distance between two different probability distributions."), ¶ 106 (providing equations for calculating the divergence between the first and second planes). As such, these steps are similar to other mathematical concepts that the courts have identified as abstract ideas. *Flook*, 437 U.S. at 594–95; *Diehr*, 450 U.S. at 191; *Digitech Image Techs. v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014).

But the mere fact that the claim recites mathematical concepts does not automatically render the claim patent-ineligible. *Diehr*, 450 U.S. at 187 ("[A] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula."). Accordingly, we proceed next to Step 2A, prong 2 of the Guidance to determine whether the recited judicial exception is integrated into a practical application. Guidance 51.

<u>Integration into a Practical Application</u>

"A claim is not 'directed to' a judicial exception, and thus is patent eligible, if the claim as a whole integrates the recited judicial exception into a practical application." *Id.* at 53–54. A claim integrates the judicial exception into a practical application when it applies, relies on, or uses the judicial exception "in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." *Id.*

Based on the record before us, we find that the recited "sensor" does not go beyond its common function. Claim 1 describes the "sensor" and functionally; that is, via the step it is configured to perform. This step essentially acquires data, which the "processing unit" manipulates to calculate a divergence. Thus, contrary to Appellants' argument that claim 1 recites an improvement to the sensor for safety critical applications (Reply Br. 1–2), the claim provides no structural details that distinguish the "sensor" from what was known at the time the application was filed (i.e., an improved sensor). Nor does the claim tie the sensor to safety critical applications. As we construe claim 1 above, the claim is not directed to any particular sensor, any particular processing unit, or any particular application in which the processed data is used. Although computer instructions can be patentably significant (*see Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016), and *Ancora Tech., Inc. v. HTC America, Inc.*, 908 F.3d 1343 (Fed. Cir. 2018)), here the cited record on appeal does not sufficiently support the view that instructions associated with the resulting calculations as claimed improve the functioning of the recited "sensor." To the contrary, the record supports viewing these limitations as amounting to mere instructions to calculate a divergence on generic computer components from data the generic sensor acquires. *See Flook*, 437 U.S. at 595–96 (merely reciting a new and presumably better method for calculating an alarm limit as part of a catalytic conversion process with no improvement to the catalytic process itself rendered a claim to such process patent-ineligible); Guidance 55 (providing examples in which a judicial exception has not been integrated into a practical application, including "instructions to implement an abstract idea on a computer"); *cf. McRO,* 837 F.3d at 1315 (claims directed to a technical improvement in animation techniques determined to be patent eligible).

As a result, we find the claim addressed in *McRO*, a case on which Appellants rely, distinguishable from Appellants' claim 1 as a whole. *McRO*'s claim recited not only rules in its claimed computer-automated process, but also the use of the rules and their application to create desired results: a sequence of synchronized, animated characters. *McRO*, 837 F.3d at 1315. As noted above, Appellants' claim 1 does not recite how the processed data is used or improves the sensor's function.

Appellants' assertion that calculating the divergence based on the data the sensor acquires "enable[s] a more accurate determination of the movement and position of the sensor than conventional systems" (App. Br. 8) is not supported on this record. Appellants rely on the statement in paragraph 5 of the Specification that "'the electronic sensor captures difference scans of real-world scene' to 'determine the movement and position.'" *Id.* Appellants do not adequately explain why this statement indicates that the sensor's accuracy is improved over conventional systems. Moreover, claim 1 does not recite how the calculations the processing unit performs are used or how accuracy of the sensor is improved.

Accordingly, within the meaning of the Guidance, we find that claim 1 does not integrate the judicial exception into a practical application. In other words, the claim is directed to the judicial exception. Thus, we turn to Step 2B of the Guidance.

Inventive Concept

Under Step 2B of the Guidance, in order to determine whether a claim provides an inventive concept, the additional elements are considered—individually and in combination—to determine whether they add a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field, or simply append well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. Guidance 56.

Appellants' arguments do not persuade us that the sensor performs anything other than conventional activities (App. Br. 8) or that the claim recites an improvement to the sensor for safety critical applications (Reply Br. 1–2). First, claim 1 recites "a sensor configured to acquire a plurality of frames of data." Appellants do not adequately explain why the recited sensor is an improvement (Reply Br. 1–2) and is not conventional (App. Br. 8). Second, the Specification does not support Appellants' argument because it describes the "sensor" both generically (Spec. ¶ 28), as well as comprising a variety of non-limiting exemplary devices (*id.* ¶ 29). The Specification is intrinsic evidence that the claimed "sensor" is conventional.

Third, Appellants' contention that "the sensor as recited in claim 1 enables a more accurate determination of the movement and position of the sensor than conventional systems" (App. Br. 8) does not find support in the Specification, nor do Appellants adequately explain how the sensor as claimed enables a more accurate determination. Therefore, the preponderance of the evidence cited in this appeal record supports the

Examiner's determination that the claims do not include additional elements that are sufficient to amount to significantly more than the abstract idea because "a sensor configured to acquire a plurality of frames of data," is merely collection or insignificant extra-solution activity (Final 2–3; Ans. 5–6).

Conclusion

Accordingly, because we are not persuaded as to error in the determinations that representative claim 1, and claims 9–20, which stand or fall with claim 1, are directed to an abstract idea and do not present an "inventive concept," we sustain the Examiner's conclusion that they are directed to patent-ineligible subject matter for being judicially excepted from 35 U.S.C. § 101.

Rejection 2: Anticipation

The Examiner rejects claims 1 and 9–20 under 35 U.S.C. § 102(a) as anticipated by Lukas[3] for the reasons provided on pages 3–9 of the Final Action.

Appellants argue the claims together. App. Br. 10–15. Therefore, we confine our discussion to claim 1, which we select as representative. Claims 9–20 stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner cites to Lukas' paragraphs 42–44 and 48 for disclosing calculating a divergence to measure a similarity between the first plane and the second plane and paragraphs 50 and 52 for using rotation and translation formulas to determine a statistical distance between probability distribution representations of the first plane and the second plane. Final 4; Ans. 8–9.

[3] Lukas et al., EP 2 249 311 A1, published November 10, 2010 ("Lukas").

Appellants contend that the Examiner erred in finding that Lukas discloses "divergence [that] determines a statistical distance between probability distribution representations of the first plane and the second plane." App. Br. 14 (quoting Final 4). According to Appellants, Lukas does not describe a distance at all, much less a statistical distance that the computed divergence determines. *Id.* Alternatively, Appellants contend that even if Lukas discloses measuring a statistical distance, the reference is silent as to measuring a similarity between the first plane and the second plane by calculating such a divergence. *Id.* at 15. Appellants conclude that Lukas, therefore, does not disclose "as complete detail as is contained in the claim." *Id.*

The Examiner responds with a hypothetical to explain how the distances between two sets of data are statistical distances because they do not represent the true distance between two particular points among the measured data, but, rather, are part of a statistical distribution. Ans. 10–11. The Examiner further explains that the distances between the planar features in Lukas' statistical distribution are likewise statistical distances because they don't represent the true distance that would have been obtained from comparison of planar features from a single "cell." *Id.* at 11.

In the Reply Brief, Appellants maintain that the cited disclosures in Lukas "disclose neither divergence nor a statistical distance." Reply Br. 5. Appellants also contend that the Examiner's explanation of statistical distances in the context of statistical distributions is inconsistent with the Specification's definition of statistical distance (a measurement of the similarity of two planes) and "at most relate[s] to distances between two sets of points." *Id.* And Appellants contend that a divergence is not calculated if the planar features match because the divergence would be zero. *Id.* at 4.

Appellants' arguments do not persuade us that the Examiner reversibly erred in rejecting the claims as anticipated, and, more specifically, finding that Lukas discloses calculating a divergence to measure a similarity between the first plane and the second plane, wherein the divergence determines a statistical distance between probability distribution representations of the first plane and the second plane, as claim 1 requires. The preponderance of the evidence in this appeal record supports the Examiner's finding that the claimed subject matter of representative claim 1 is anticipated within the meaning of Section 102 in view of Lukas. Accordingly, we will sustain the Examiner's rejection for essentially those reasons expressed in the Answer, including the Response to Argument section, and we add the following primarily for emphasis.

In order to anticipate, a reference must identify something falling within the claimed subject matter with sufficient specificity to constitute a description thereof within the purview of section 102. *In re Schaumann*, 572 F.2d 312, 317 (CCPA 1978). It is well established that anticipation under section 102 is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990). The record supports the Examiner's finding (Ans. 9; Final 4) that Lukas discloses that the points selected are part of a statistical distribution. Lukas ¶ 28. Appellants' position (Reply Br. 4–5) that the cited portions of Lukas compare the location of planar features extracted from a first set of 3D data points with the planar features from a second set of 3D data points, rather than the statistical distance between two different probability density functions is unpersuasive because Appellants fail to explain adequately why the distance between points in a Gaussian distribution, as Lukas determines, is not a "statistical distance." In other words, on this record, Appellants do not rebut the Examiner's finding (Ans. 9) that the distances between points that are part of a statistical distribution (as Lukas discloses) are "statistical distances."

Accordingly, we sustain the Examiner's rejection of claims 1 and 9–20 under 35 U.S.C. § 102(a) as anticipated by Lukas.

Rejections 3–5: Obviousness

The Examiner rejects claims 1 and 9–20 under 35 U.S.C. § 103(a) over the combination of Lo[4] and Lukas alone or together with secondary references for the reasons provided on pages 9–23 of the Final Action. Specifically, and as noted above in connection with the anticipation rejection, the Examiner cites paragraphs 42–44 and 48 of Lukas for disclosing calculating a divergence to measure a similarity between the first plane and the second plane and paragraphs 50 and 52 for using rotation and translation formulas to determine a statistical distance between probability distribution representations of the first plane and the second plane. Final 11; Ans. 8–9.

Appellants contend that the Examiner erred because none of the cited references disclose "calculating a divergence to measure a similarity between the first plane and the second plane, wherein the divergence

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[4] Tsz-Wai Rachel Lo & J. Paul Siebert, *Local feature extraction and matching on range images: 2.5D SIFT*, 113 COMPUTER VISION AND IMAGE UNDERSTANDING 1235–50 (2009) ("Lo").

determines a statistical distance between probability distribution representations of the first plane and the second plane" as recited in claim 1. App. Br. 17–19.

Appellants' arguments do not persuade us that the Examiner reversibly erred in rejecting the claims over the cited prior art references. Appellants' arguments are based on the Examiner's finding that Lukas discloses calculating a divergence to measure a similarity between the first plane and the second plane, wherein the divergence determines a statistical distance between probability distribution representations as required by the claims. For the same reasons discussed above in connection with the anticipation rejection over Lukas, we find the preponderance of the evidence supports the Examiner's rejections over the combination of Lukas with the secondary prior art references.

Even assuming that Lukas does not explicitly teach determining a statistical distance between probability distribution representations of the first plane and the second plane, contrary to the Appellants' position, a person having ordinary skill in the art would have drawn a reasonable inference from Lukas' teachings that the planar location information that is compared is part of a statistical distribution and, therefore, a statistical distance is determined. The record supports the Examiner's finding (Ans. 10) that Lukas describes the point parameters for a plane to be spread around an ideal value in a Gaussian like distribution. Lukas ¶ 28. The distance Lukas determines would have been reasonably expected to be based on values selected from a statistical distribution and, therefore, a statistical distance. *In re Preda*, 401 F.2d 825, 826 (CCPA 1968) ("[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom."); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) ("A person of ordinary skill is also a person of ordinary creativity, not an automaton.").

For these reasons and those the Examiner provides, we uphold the Examiner's rejection of claims 1 and 9–20 under 35 U.S.C. § 103(a) as obvious over Lo and Lukas alone or together with secondary references.

DECISION

Upon consideration of the record, and for the reasons given above and in the Final Office Action and the Examiner's Answer, the decision of the Examiner rejecting claims 1 and 9–20 under 35 U.S.C. §§ 101, 102(a), and 103(a) is *affirmed*.

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).

AFFIRMED