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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/344,342	08/15/2014	Nico Steinhardt	14423-121 (12777WOUS)	6638
40878	7590	12/17/2019	EXAMINER	
BGL/Continental Teves Inc. C/O BRINKS GILSON & LIONE 524 South Main Street Suite 200 Ann Arbor, MI 48104			SMITH, AARON C	
			ART UNIT	PAPER NUMBER
			3665	
			MAIL DATE	DELIVERY MODE
			12/17/2019	PAPER

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* NICO STEINHARDT

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Appeal 2018-001938  
Application 14/344,342  
Technology Center 3600

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Before JOHN C. KERINS, ANNETTE R. REIMERS, and  
BEVERLY M. BUNTING, *Administrative Patent Judges*.

BUNTING, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> In this Decision, we refer to the Specification filed March 12, 2014 (“Spec.”); Final Office Action dated June 17, 2016 (“Final Act.”); Advisory Action dated September 26, 2016 (“Advisory Act.”); Appeal Brief filed November 22, 2016 (“Appeal Br.”); Corrected Appeal Brief filed December 19, 2016 (“Corrected Appeal Br.”); Examiner’s Answer dated November 9, 2017 (“Ans.”); and Appellant’s Reply Brief filed December 15, 2017 (“Reply Br.”).

### STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>2</sup> appeals from the Examiner's decision to reject claims 1, 2, and 4–9. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

### CLAIMED SUBJECT MATTER

The claims are directed to a sensor system for a vehicle. Spec. Abstract. Of the claims on appeal, claim 1 is independent, and claims 2 and 4–9 depend from claim 1. Corrected Appeal Br. Claims App'x. Claim 1, reproduced below with revised formatting, is illustrative of the subject matter on appeal:

1. A sensor system for a vehicle, comprising:

a processor;

at least two wheel rotation speed sensor elements being in communication with the processor,

at least one steering angle sensor element being in communication with the processor, the processor being configured to evaluate sensor signals of the sensor elements,

wherein the processor is configured to calculate from the sensor signals of the wheel rotation speed sensor elements and the steering angle sensor element, at least a velocity of the vehicle along a first defined axis, a velocity of the vehicle along a second defined axis, and a rotation rate of the vehicle about a third defined axis,

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<sup>2</sup> We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as CONTINENTAL TEVES AG AND CO OHG. Appeal Br. 2.

wherein the processor for the velocity of the vehicle along the first defined axis, the velocity of the vehicle along the second defined axis, and the rotation rate of the vehicle about a third defined axis is configured to calculate for each a variance and provide the variances as an additional output variable, and

wherein the processor is configured to evaluate the validity of the velocity of the vehicle along the first defined axis, the velocity of the vehicle along the second defined axis, and the rotation rate of the vehicle about a third defined axis on the basis of the calculated variances,

wherein the processor is configured to utilize the variances of the velocity along the first and along the second defined axis and of the rotation rate about the third defined axis in the evaluation of the validity of output variables,

wherein the processor is further configured to check the variance of the velocity of the vehicle along the first defined axis, the velocity of the vehicle along the second defined axis, and the rotation rate of the vehicle about a third defined axis with respect to a or in each case one defined limit value being overshoot, and

wherein, in the event of one or more of the variances being overshoot, the processor is further configured to provide no validity of present output variables.

## REFERENCES

The prior art relied upon by the Examiner is:

<b>Name</b>	<b>Reference</b>	<b>Date</b>
Lu et al. (Lu)	US 2008/0086248 A1	April 10, 2008
Takahashi et al. (Takahashi)	US 2010/0250083 A1	September 30, 2010

### REJECTIONS ON APPEAL

The Examiner maintains the following rejections on appeal:<sup>3</sup>

1. Claims 1, 2, and 4–9 stand rejected under 35 U.S.C. § 101 as being directed to a judicial exception without significantly more. Final Act. 6–7.
2. Claim 1 stands rejected under 35 U.S.C. § 112(b) as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. *Id.* at 7–8.
3. Claims 1, 2, and 4–8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lu. *Id.* at 8–14.
4. Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Lu and Takahashi. *Id.* at 14–15.

### ANALYSIS

We have reviewed the Examiner’s rejections in light of Appellant’s arguments and determine that Appellant has not identified reversible error in the Examiner’s rejections of claims 1, 2, and 4–9. Accordingly, we affirm each of the Examiner’s rejections based on the fact-finding and reasoning set forth below, and in the Final Action, Advisory Action, and Answer.

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<sup>3</sup> Because Appellant did not file a terminal disclaimer, the Examiner maintained the double patenting rejection. Final Act. 2. The Examiner noted that the Terminal Disclaimer filed on July 15, 2016 was rejected in a decision filed on August 2, 2016. Ans. 12. Appellant submits that a terminal disclaimer was subsequently filed on December 7, 2017, rendering this rejection moot. Reply Br. 1. We agree that this rejection is not before us for review.

*35 U.S.C. § 101*

Appellant argues claims 1, 2, and 4–9 together as a group. Appeal Br. 6–10. Thus, claims 2 and 4–9 stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

For the reasons stated below, and based on the findings and analysis provided by the Examiner in the Final Office Action and the Answer, we determine that claim 1 is directed to an abstract idea and does not contain an inventive concept sufficient to transform the claimed abstract idea into a patent-eligible application. We, therefore, sustain the Examiner’s rejection under 35 U.S.C. § 101.

*1. Principles 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. 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 184 n.7 (quoting *Corning v. Burden*, 56 U.S. 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

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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.* (alterations in original) (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.*

## 2. USPTO § 101 Guidance

The USPTO recently published revised guidance on the application of § 101. USPTO’s *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Guidance”). Under Step 2A, Prong One of the Guidance, we determine if the claim recites a judicial exception, including particular groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity, or mental processes). *Id.* at 52–53. If so, we then analyze the claim to determine whether the recited judicial exception is integrated into a practical application of that exception under Step 2A, Prong Two of the Guidance. *Id.* at 53–55; MPEP §§ 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 08.2017, Jan. 2018). Only if the claim fails to integrate the exception and thus is “directed to” the judicial exception, do we then move to Step 2B of the Guidance and look to whether the claim adds a specific limitation beyond the judicial exception that is not well-understood, routine, and conventional activity in the field or whether the claim simply appends well-understood, routine, and conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. *Guidance*, 84 Fed. Reg. at 56. Below, we consider Appellant’s arguments in light of the Guidance.

3. *Analysis*

a. *Step 1: Does Claim 1 Recite a Statutory Category?*

Under step 1 of the Guidance, we consider whether the claimed subject matter falls within the four statutory categories set forth in § 101. It is undisputed that claim 1 is directed to a machine, i.e., “[a] sensor system for a vehicle.” Corr. Appeal Br. Claims App’x. Consequently, we proceed to the next step of the analysis.

b. *Step 2A Prong 1: Does Claim 1 Recite a Judicial Exception?*

We next consider whether claim 1 “recites a judicial exception, i.e., an abstract idea, a law of nature, or a natural phenomenon” under Step 2A Prong 1 of the Guidance. Guidance, 84 Fed. Reg. at 54; *see Alice*, 573 U.S. at 216. In applying the first step of the *Alice* inquiry, the Examiner finds that “the claimed invention is directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more.” Final Act. 6. Specifically, the Examiner states that claim 1 is directed to

collecting and comparing information, (i.e., the steps of receiving and comparing velocity information) to organize information, which is similar to concepts that have been identified as abstract by the courts, such as using categories to organize, store and transmit information in *Cyberfone* (*Cyberfone Systems, LLC v. CNN Interactive Group, Inc.*, February 26, 2014, Dyk, T.) or comparing new and stored information and using rules to identify options in *SmartGene* (*SmartGene, Inc. v. Advanced Biological Laboratories, SA* (Fed. Cir. 2014)). Claim 1 is directed towards gathering velocity data and angular data and comparing said data in some way to organize the data into classifications with respect to “validity”.

*Id.*

Appellant responds that the claim 1 is patentable under 35 U.S.C. § 101 because it requires “physical objects, such as hardware beyond just a general-purpose computer.” Appeal Br. 6 (citing *Ex parte Schmid*, Appeal No. 2012-002155 (PTAB Dec. 26, 2014)). Appellant argues that the invention of claim 1 is directed to a machine because it recites hardware-based elements, e.g., wheel speed sensors and steering wheel angle sensors, in addition to a processor. *Id.* at 7, 10 (“the claimed invention includes very tangible items, including at least two wheel rotation speed sensor, at least one steering angle sensor element, as well as a processor.”). Appellant compares the Examiner’s findings to the *Enfish* decision, in arguing that the Examiner incorrectly characterized the claimed invention as “directed to collecting and comparing data.” Appeal Br. 9 (citing *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016)).

Specifically, Appellant argues that

claim 1, as a whole, is directed to a sensor system for a vehicle that provides or enables a relatively high degree of accuracy with respect to its signal processing. The system includes wheel rotation speed sensor elements, at least one steering angle sensor element and a signal processing device which is designed to evaluate at least part of the sensor signals of the sensor elements together. The signal processing device comprises a vehicle model unit which is designed to calculate, from the sensor signals of the wheel rotation speed sensor elements and the steering angle sensor elements, at least the speed along a first defined axis, the speed along a second defined axis and the rotation rate about a third defined axis.

*Id.*

Consistent with the Examiner’s analysis, we determine that claim 1 recites a judicial exception, i.e., an abstract idea, in the form of mathematical concepts, including the use of mathematical calculations, mathematical

equations/relationships, and/or performing mathematical operations on collected data. For example, calculating velocity and rotational rate about a particular axis, as well as calculating the corresponding variance, involves mathematical equations. *See* Spec. ¶ 8 (“Preferably, the vehicle model unit is designed in such a way that it uses a least-squared error method for solving an overdetermined system of equations for the calculation.”), ¶ 17 (“for each of its three calculated variables, namely the velocity along a first defined axis, the velocity along a second defined axis, and the rotation rate about a third defined axis, it calculates information relating to the data quality and provides this as additional output variable, in particular in each case a variance.”). Checking the variance of the velocity and rotation rate against a predefined value and providing an output of “no validity” likewise involves a mathematical equation/relationship. *See* Spec. ¶ 25 (“The signal processing device of the sensor system additionally preferably comprises a fusion filter. The fusion filter provides a defined fusion data set in the course of the joint evaluation of at least the sensor signals and/or signals derived therefrom of the sensor elements, that is to say of the odometry, and in particular additionally of the output signals of a satellite navigation system and/or signals derived therefrom. Said fusion data set has in each case data with respect to defined physical variables, wherein the fusion data set comprises, with respect to at least one physical variable, a value of said physical variable and information about the data quality thereof, wherein this information about the data quality is expressed as variance in accordance with the example.”).

Although we find that claim 1 recites an abstract idea in the form of mathematical concepts, we recognize that this 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.”). Thus, we proceed to the Step 2 of *Alice*, and as set forth in Step 2A, Prong 2 of the Guidance.

*c. Step 2A Prong 2: Whether the Claims Integrate a Judicial Exception into a Practical Application*

Under Step 2A Prong 2 of the guidance, we must “(a) [i]dentify[] whether there are any additional elements recited in the claim beyond the judicial exception(s); and (b) evaluat[e] those additional elements individually and in combination to determine whether they integrate the exception into a practical application.” Guidance, 84 Fed. Reg. at 54–55. Additional elements that merely add insignificant extra-solution activity to an abstract idea fail to integrate the abstract idea into a patent-eligible practical application. *See id.* at 55.

Appellant argues that the claimed invention is like *Enfish* because it is directed to an improvement in computer technology, and in particular, “a sensor system for a vehicle that provides or enables a relatively high degree of accuracy with respect to its signal processing.” Appeal Br. 9.

We are not persuaded by Appellant’s argument. As the Examiner points out, “[t]he courts found that *Enfish* was not directed towards an abstract idea because [it was] directed to a specific implementation of a solution to a problem in the *software arts*, wherein the improvement in computer-related technology was defined by logical structures and processes, rather than specific physical features.” Ans. 13. We agree that claim 1 of the subject invention requires hardware in addition to a processor, yet, as the Examiner correctly recognizes, claim 1 “recites generic hardware components performing their intended functions.” *Id.* Namely, claim 1 recites (1) that the sensor elements, i.e., two wheel rotation speed sensor

elements and at least one steering angle sensor element, are in communication with the processor; (2) the processor is “configured to evaluate sensor signals of the sensor elements”; (3) the processor uses the sensor signals to calculate “at least a velocity of the vehicle along a first defined axis, a velocity of the vehicle along a second defined axis, and a rotation rate of the vehicle about a third defined axis”; (4) the processor uses these velocities “to calculate for each a variance and provide the variances as an additional output variable”; (5) the processor evaluates the validity of the calculated velocities and rotation rate using the calculated variances; (6) the processor utilizes the variances in velocity and rotation rate in evaluating the validity of output variables; (7) the processor checks the variance of the velocity and rotation rate against “a or in each case one defined limit[ed] value being overshot”; and (8) if one or more variances is overshot, the processor “is further configured to provide no validity of present output variables.” *See Claim 1 supra.*

In other words, once the processor receives inputs from the sensor elements, all calculations to determine the validity of the output variables take place entirely in the processor. We agree with the Examiner’s assessment that Appellant “has not provided any meaningful arguments or citations from the claim language to show that the claimed invention is performing any significant steps beyond comparing and organizing data.” Ans. 14. Nor does Appellant identify specific claim limitations that are directed towards improving computer technology, given that the language of claim 1 does not require that the claimed system “provides or enables a relatively high degree of accuracy with respect to its signal processing.” *Id.* (emphasis omitted).

Our determination is not impacted by the recent non-precedential Federal Circuit decision in *Thales Visionix Inc., v. United States*, 850 F.3d 1343 (Fed. Cir. 2017), in which the court found that the claims were not directed to an abstract idea and did not proceed to step two of *Alice* because “the invention applied laws of physics to solve this problem, and the mere presence of a mathematical equation in the solution ‘does not doom the claims to abstraction.’” Reply Br. 3. In its Reply, Appellant cites to *Thales Visionix*, arguing that the claimed invention is “nearly identical to the issue involved in *Thales Visionix*” because both use information from sensors to calculate a physical parameter, which in this case is the claimed “speed along a first defined axis, the speed along a second defined axis and the rotation rate about a third defined axis.” *Id.*

Appellant’s reliance on *Thales Visionix* is inapposite. In *Thales Visionix*, the Federal Circuit analogized the claims as “nearly indistinguishable” to the claims at issue in *Diehr*. *Thales Visionix*, 850 F.3d at 1348 (“Just as the claims in *Diehr* reduced the likelihood that the rubber molding process would result in ‘overcuring’ or ‘undercuring,’ [*Diehr*] at 187, 101 S.Ct. 1048, the claims here result in a system that reduces errors in an inertial system that tracks an object on a moving platform.”). The Court went on to explain that “the claims are directed to systems and methods that use inertial sensors in a non-conventional manner to reduce errors in measuring the relative position and orientation of a moving object on a moving reference frame.” *Thales Visionix*, 850 F.3d at 1348–49.

Here, Appellant does not argue that the data from the sensor elements, i.e., two wheel rotation speed sensor elements and at least one steering angle sensor element, and resultant mathematical equations “are a consequence of the arrangement of the sensors and the unconventional choice of reference

frame in order to calculate position and orientation.” *Id.* at 1349. In other words, Appellant does not argue that the claimed sensors and/or calculations are somehow used in a non-conventional manner. As such, we are not persuaded by Appellant’s argument that the claims here are similar to the claims challenged in *Thales Visionix*.

After considering claim 1 as a whole, and for the reasons set forth by the Examiner, we find that the additional elements recited in claim 1 beyond the abstract idea, individually and in combination, do not integrate the abstract idea into a practical application. *Alice*, 573 U.S. 217–18. As noted by the Examiner, the processor is recited at a high level of generality, i.e., as a generic processor performing a generic computer function of processing data from sensors in determining vehicle velocity. Ans. 15. Accordingly, this additional element does not integrate the abstract idea into a practical application because it does not impose any meaningful limits on practicing the abstract idea.

Having determined that claim 1 recites a judicial exception and the additional elements recited in the claim do not integrate the judicial exception into a practical application, i.e., the claim is directed to an abstract idea, we proceed to step 2B of the Guidance.

*d. Step 2B: Whether Claim 1 Provides an Inventive Concept.*

Under Step 2B of the Guidance, we determine whether the claim provides an “inventive concept,” i.e., whether the additional elements beyond the judicial exception, individually and in combination, amount to “significantly more” than the judicial exception itself. Guidance, 84 Fed. Reg. at 56. According to the Guidance, “simply append[ing] well-understood, routine, conventional activities previously known to the

industry, specified at a high level of generality,” is indicative that an inventive concept is absent. *Id.*

The Examiner finds that:

The additional features recited in the claims, the processor, does not amount to significantly more than the abstract idea because these features simply specify, at a high level of generality, well-understood, routine and conventional activities previously known to the industry, and append them to the judicial exception, such as determining the velocity of a vehicle in a specific direction with respect to the wheel velocity and the steering angle of a vehicle, and using the determined wheel velocity and steering angle to estimate a velocity of the vehicle. Therefore, these additional features as recited in the claim limitations, whether viewed individually or as an ordered combination, merely generally link the use of the judicial exception to a particular technological environment or field of use without limiting use of the judicial exception in any meaningful way.

Final Act. 7. Appellant, in turn, does not dispute directly the Examiner’s finding that the elements recited in claim 1 fail to amount to “significantly more” than the abstract idea itself. Appeal Br. 9 (“because the claimed invention is an improvement in computer technology as explained above and cannot be deemed to be abstract because of the mentioned hardware elements, there is no need to proceed to the second step of the eligibility analysis, because the claimed invention is not directed to an abstract idea in the first instance.”).

As discussed above in connection with Step 2A, Prong 2, the additional elements in claim 1 amount to no more than mere instructions to apply the exception using a generic computer component in communication with conventionally known sensors. The same analysis applies here in step 2B, i.e., mere instructions to apply an exception on a generic computer cannot integrate a judicial exception into a practical application at Step 2A

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or provide an inventive concept in Step 2B. For the same reasons, we find that the additional elements recited in claim 1 beyond the abstract idea, individually and as an ordered combination, do not provide an inventive concept because they do not amount to “significantly more” than the judicial exception itself. *Alice*, 573 U.S. 217–18.

As such, we determine claim 1 is directed to patent-ineligible subject matter.

#### 4. Summary

Accordingly, we affirm the Examiner’s rejection of claims 1, 2, and 4–9 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter.

#### *35 U.S.C. § 112(b)*

In the Final Action, the Examiner stated that “the excerpt ‘configured to consider’ is unclear. In particular, it is unclear what processes are related to ‘considering’ and how the process of ‘considering’ is differentiated from the process of ‘checking’. For the purposes of examination the Examiner interprets ‘considering’ to mean that the variances are used in some way by a processor.” Final Act. 7–8; Ans. 6. Appellant recognized this rejection in describing the “Status of Amendments,” but did not list this rejection in its summary of grounds to be reviewed on appeal. Appeal Br. 2, 5. Nor does Appellant provide arguments in its Appeal Brief directed to this rejection. *See generally* Appeal Br. In its Reply, Appellant observes that the Examiner did not enter the amendment of claim 1 after the Final Office Action that

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would purportedly correct this deficiency. Reply Br. 2. We note that this statement is consistent with the Advisory Action dated September 26, 2016.<sup>4</sup>

Because Appellant does not present cogent arguments in its Appeal Brief addressing this rejection, the Examiner’s rejection of claim 1 under 35 U.S.C. § 112(b) as being indefinite for failing to particularly point out and distinctly claim the subject matter Appellant regards as the invention is summarily affirmed for the reasons stated by the Examiner in the Final Office Action and Answer. *See* 37 C.F.R. § 41.31(c) (“An appeal, when taken, is presumed to be taken from the rejection of all claims under rejection unless cancelled by an amendment filed by the applicant and entered by the Office.”); *Ex parte Frye*, Appeal No. 2009-006013, slip op. at 10, 2010 WL 889747 (BPAI Feb. 26, 2010) (precedential) (“Filing a Board appeal does not, unto itself, entitle an appellant to *de novo* review of all aspects of a rejection. If an appellant fails to present arguments on a particular issue – or, more broadly, on a particular rejection – the Board will not, as a general matter, unilaterally review those uncontested aspects of the rejection.”).

*OBVIOUSNESS BASED AT LEAST IN PART ON LU*

Appellant argues that claims 1, 2, and 4–8 are not obvious based on Lu (Appeal Br. 10–13), and that claim 9 is not obvious based on Lu and Takahashi (*id.* at 13). Because Appellant argues claims 1, 2, and 4–8 together as a group (*id.* at 10–13), and argues that claim 9 is allowable for the same reasons as claim 1 (*id.* at 13), we select claim 1 as representative and claims 2 and 4–9 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

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<sup>4</sup> We do not have the authority to compel the Examiner to enter an amendment.

The Examiner finds that Lu directly teaches most of the elements of claim 1. Final Act. 8–10. For example, the Examiner finds that Lu teaches a processor (ISS unit 26), two wheel rotation speed sensor elements in communication with the processor, and at least one steering angle sensor. *Id.* at 8–9 (citing Lu Figure 2, Abstract). The Examiner also finds that Lu teaches calculating the velocity and rotation rate of the vehicle along a first axis, a second axis, and a third axis. *Id.* at 9 (citing Lu ¶¶ 47, 58, Abstract). Lu, according to the Examiner, also teaches determining a variance between a sensor’s actual value and an estimated output value, and the validity of the velocity and rotation rate of the vehicle about the defined axis using the calculated variances. *Id.* (citing Lu ¶¶ 58, 73, 79–83).

Claim 1 also requires that “the processor is further configured to check the variance of the velocity of the vehicle along the first defined axis, the velocity of the vehicle along the second defined axis, and the rotation rate of the vehicle about a third defined axis with respect to a or in each case one defined limit value being overshoot.” Corr. Appeal Br. Claims App’x. The Examiner finds that:

Although Lu does not expressly indicate that a limit is overshoot, if a determined variance between a particular sensor's actual output value and an estimated output value calculated do not match, the actual output value is considered a value without plausibility, as seen in para. [0080], which encompasses and corresponds to determining if a variance has “validity” if a value is overshoot.

Final Act. 10–11. The Examiner reasons that “it would have been prima facie obvious for one of ordinary skill in the art to modify Lu to use an overshoot value as a mismatch since overshooting a value corresponds to values not matching.” *Id.* at 11.

Claim 1 further requires that “in the event of one or more of the variances being overshoot, the processor is further configured to provide no validity of present output variables.” Corr. Appeal Br. Claims App’x. The Examiner finds that the disclosure in Lu regarding “determining a variance between a particular sensor's actual output value and an estimated output value” teaches this limitation. Final Act. 11. Noting that Lu does not expressly teach that a limit is overshoot, the Examiner finds that

if a determined variance between a particular sensor's actual output value and an estimated output value calculated do not match, the actual output value is considered an value without plausibility, as seen in para.[0080], which encompasses and corresponds to determining if a variance has “validity” if a value is overshoot.

*Id.* The Examiner reasons that “it would have been prima facie obvious for one of ordinary skill in the art to modify Lu to use an overshoot value as a mismatch since overshooting a value corresponds to values not matching.”

*Id.*

Initially, Appellant disputes the Examiner’s use of a single reference, Lu, in an obviousness rejection, arguing that Lu does not “identify a teaching, suggestion, or motivation to modify the single reference to fall within the scope of the claim.” Appeal Br. 12. Appellant’s argument in this regard does not apprise us of Examiner error. It is well settled that “[a] suggestion, teaching, or motivation to combine the relevant prior art teachings does not have to be found explicitly in the prior art, as the teaching, motivation, or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references.” *In re Kahn*, 441 F.3d 977, 987 (Fed. Cir. 2006).

Here, the Examiner identifies the correspondence between the elements of the claim and the teachings in Lu with respect to determining if a variance has “validity” if a value is overshoot and reasons that one of ordinary skill in the art would modify Lu to use an overshoot value as a mismatch because “overshooting a value corresponds to values not matching.” Final Act. 11. Additionally, the Examiner identifies the disclosure in Lu regarding a value without plausibility as corresponding with determining if a variance has “validity” if a value is overshoot and again reasons that one of ordinary skill in the art would to modify Lu in the proposed manner because “overshooting a value corresponds to values not matching.” *Id.* Appellant does not dispute the Examiner’s rationale for the proposed modification.

Next, Appellant argues that the Examiner’s reliance on paragraphs 73–83 of Lu is unavailing because the relied-on passages do not provide the necessary teaching, suggestion, or motivation for the proposed modification. Appeal Br. 12. According to Appellant, Lu detects failures of either the sensor itself or the mounting of the sensor, and considers the data output from the sensor. *Id.* This narrow interpretation of Lu is not convincing. Lu describes how, in step 302, signals from various sensors are received and that the “quality” of the sensor signal may be evaluated, including monitoring for sudden changes and out-of-range values. Lu ¶ 78. As the Examiner explains, Lu determines the plausibility of the sensors, and that “if a tested sensor’s output does not match an expected value based on the output values of other sensors, then the tested sensor’s output is considered ‘not plausible.’” Ans. 16 (citing Lu ¶ 79). The Examiner argues persuasively that “[o]ne of ordinary skill in the art would understand that two values that do not match would indicate that a first value is lower than a

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second value, or that a first value is higher (overshot) than a second value.”  
*Id.* In response, Appellant does not dispute directly the Examiner’s argument, but rather repeats its arguments from the Appeal Brief. *See* Reply Br. 4 (“these statements still do not provide the necessary teaching, suggestion, or motivation to modify the single reference to fall within the scope of the claim. Lu is focused on detecting failures of the sensor - either the sensor itself or the mounting of the sensor. So long as the sensor is outputting data, the data will be considered.”).

Appellant also argues that Lu does not check the variance of its output variables with respect to “an or in each case one defined limit value being overshoot” and if overshoot, “no validity of the present output variables of the vehicle model unit is provided.” Appeal Br. 12. We agree with the Examiner’s response that this claim element is satisfied by the passage in Lu describing how

**“[i]n step 304, the plausibility of the sensors is determined in the sensor plausibility check module (SPC)”**, wherein the language “**the sensors**” encompasses all of the sensors in the vehicle system, including, but not limited to, the roll rate sensor, the yaw rate sensor, the lateral acceleration sensor, the vertical acceleration sensor, a vehicle longitudinal acceleration sensor, lateral or vertical speed sensor including a wheel-based speed sensor disclosed in para. [0058] of Lu.

Ans. 16 (citing Lu ¶ 79). Appellant does not dispute the Examiner’s argument in its reply, but rather repeats its argument from the Appeal Brief. Reply Br. 4.

Next, Appellant contends that the statement in Lu regarding “[a] reduced model computation will be conducted and a partial function control will be determined. The info from the sensor fault processing logic will be fed to the ISCS unit 44 through the signal flow 309,” suggests that invalid

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data is utilized as the ISCS. *Id.* at 12–13 (citing Lu ¶ 80). More persuasive is the Examiner’s evidence that Lu expressly states that a “**reduced model computation will be conducted**” in the event a sensor is determined to be “not plausible.” Ans. 17 (citing Lu ¶ 80). This passage, according to the Examiner, suggests “that the incorrect data from the ‘not plausible’ sensor is *not* used to control the vehicle with respect to the vehicle model.” *Id.* (emphasis added). The Examiner contends that Lu describes how the ISCS *receives* information from the sensor processing fault logic, and not that “invalid data” is *output* by the sensor processing fault logic. *Id.* We agree with the Examiner that Appellant does not explain how such invalid data would be used by the ISCS. *Id.* Nor does Appellant address the Examiner’s response in its Reply, instead, Appellant reiterates its arguments from the Appeal Brief. Reply Br. 4.

Appellant further argues that the technical features of claim 1 result in “accelerated convergence of the calculation of the fusion data set is possible, and thus a faster relative accuracy of the output data of the sensor system can be achieved.” *Id.* at 5. This argument is not persuasive because it is not commensurate with the scope of claim 1, which does not require “accelerated convergence of the calculation of the fusion data set” nor achievement of “faster relative accuracy of the output data of the sensor system.”

Appellant does not contest the Examiner’s reasons for modifying Lu, and the Examiner’s reasons comport with the Federal Circuit’s recognition of “[t]he normal desire of artisans to improve upon what is already generally known.” *In re Ethicon, Inc.*, 844 F.3d 1344, 1351 (Fed. Cir. 2017). We find that the Examiner provides a reasoned basis, supported by a preponderance of the evidence in the record, explaining why one of ordinary skill would

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have utilized the teachings of Lu to arrive at the claimed invention of claim 1.

Accordingly, we affirm the Examiner's rejection of claims 1, 2, and 4-8 as obvious over Lu. Because Appellant relies on its arguments in connection with claim 1 for the rejection of claim 9 as obvious based on Lu and Takahashi, we, likewise, affirm the Examiner's rejection of claim 9 as obvious based on Lu and Takahashi for the same reasons.

### CONCLUSION

The Examiner's rejections of claims 1, 2, and 4-9 are affirmed.

### DECISION SUMMARY

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 2, 4-9	101	Eligibility	1, 2, 4-9	
1	112(b)	Indefiniteness	1	
1, 2, 4-8	103(a)	Lu	1, 2, 4-8	
9	103(a)	Lu, Takasashi	9	
<b>Overall Outcome</b>			1, 2, 4-9	

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