

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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HTC CORPORATION and HTC AMERICA, INC.

Petitioners

v.

UNILOC LUXEMBOURG, S.A.<sup>1</sup>

Patent Owner

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IPR2018-01589

PATENT 7,653,508

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**PATENT OWNER PRELIMINARY RESPONSE TO PETITION**

**PURSUANT TO 37 C.F.R. §42.107(a)**

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<sup>1</sup> The owner of this patent is Uniloc 2017 LLC.

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**List of Exhibits**

Exhibit No.	Description
2001	Declaration of William C. Easttom

## **I. INTRODUCTION**

Uniloc 2017 LLC (“Uniloc” or “Patent Owner”) submits this Preliminary Response to Petition IPR2018-01589<sup>2</sup> for *Inter Partes* Review (“Pet.” or “Petition”) of United States Patent No. 7,653,508 (“the ’508 patent” or “EX1001”) filed by HTC Corporation and HTC America, Inc. (“Petitioner”). The Petition is procedurally and substantively defective for at least the reasons set forth herein.

## **II. JOINDER SHOULD BE DENIED BECAUSE PETITIONER CHALLENGES AN ADDITIONAL CLAIM AND JOINDER WOULD BE PREJUDICIAL TO PATENT OWNER**

Though Petitioner seeks to join the petition in IPR2018-00387, in the instant Petition, Petitioner “add[s] dependent claim 20 as a challenged claim.” Paper 9 at 1. Petitioner’s request for joinder should be denied because it would be prejudicial to Patent Owner because it would: (1) introduce a new claim (claim 20) not previously challenged, (2) add new claim language and claim construction issues regarding that newly challenged claim, and (3) add new declarations and arguments that are different than those in IPR2018-00387. Each of these new additions will require significant additional analysis and expense on behalf of patent owner, and an additional claim of the ’508 Patent would be involved in the IPR proceedings and create a side-issue that takes away from the issues of the original petition, especially during oral argument. Further, contrary to Petitioner’s allegations, new claim 20 does not have substantially similar limitations as dependent claims 3 and 13. This is shown by the Petition itself which merely

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<sup>2</sup> The instant Petition and Petitioner seek joinder to IPR2018-00387. *See* Paper 9. Furthermore, as Petitioners state, the instant Petition “substantially copies” the original petition in IPR2018-00387. *Id.*, at 1.

alleges in conclusory fashion, and without any evidence or analysis, that: “Because the validation interval for each step is updated based on the timing and duration of the immediately preceding step, a POSITA would have understood that the validation interval (i.e., the cadence window) is adjusted based on a measured cadence associated with the periodic human motion.” Pet. 72. And for alleged support, the Petition cites to its expert, however, its expert’s declaration merely parrots the exact same conclusory allegation above. *Compare* Pet. 72 with EX1003, p. 94-95.

### **III. THE ’508 PATENT**

The ’508 patent is titled “Human activity monitoring device.” The ’508 patent issued January 26, 2010, from U.S. Patent Application No. 11/644,455 filed December 22, 2006.

The inventors of the ’508 patent observed that at the time, step counting devices that utilize an inertial sensor to measure motion to detect steps generally required the user to first position the device in a limited set of orientations. In some devices, the required orientations are dictated to the user by the device. In other devices, the beginning orientation is not critical, so long as this orientation can be maintained. EX1001, 1:19–26. Further, the inventors observed that devices at the time were often confused by motion noise experienced by the device throughout a user's daily routine. The noise would cause false steps to be measured and actual steps to be missed in conventional step counting devices. Conventional step counting devices also failed to accurately measure steps for individuals who walk at a slow pace. *Id.*, 1:27–34.

According to the invention of the ’508 Patent, a device to monitor human

activity using an inertial sensor assigns a dominant axis after determining the orientation of an inertial sensor. the orientation of the inertial sensor is continuously determined, and the dominant axis is updated as the orientation of the inertial sensor changes. *Id.*, 2:8–15.

#### IV. RELATED PROCEEDINGS

The following proceedings are currently pending cases concerning U.S. Pat. No. 7,653,508 (EX1001).

Case Caption	Case Number	District	Case Filed
<i>Uniloc USA, Inc. et al v. HTC America, Inc.</i>	2-17-cv-01629	WAWD	November 1, 2017
<i>Uniloc USA, Inc. et al v. LG Electronics USA, Inc. et al</i>	4-17-cv-00832	TXND	October 13, 2017
<i>Uniloc USA, Inc. et al v. Huawei Device USA, Inc. et al</i>	2-17-cv-00737	TXED	November 9, 2017
<i>Uniloc USA, Inc. et al v. Samsung Electronics America, Inc. et al</i>	2-17-cv-00650	TXED	September 15, 2017
<i>Uniloc USA, Inc. et al v. Apple Inc.</i>	2-17-cv-00522	TXED	June 30, 2017
<i>Apple Inc. v. Uniloc 2017 LLC et al</i>	IPR2018-00387	PTAB	Dec. 22, 2017
<i>Uniloc USA, Inc. et al v. Apple Inc.</i>	4-18-cv-00364	CAND	Jan. 17, 2018
<i>Apple Inc. v. Uniloc Luxembourg SA</i>	IPR2018-01026	PTAB	May 4, 2018
<i>Uniloc USA Inc et al v. LG Electronics U.S.A., Inc. et al</i>	4-18-cv-02918	CAND	May. 17, 2018
<i>LG Electronics, Inc. et al v. Uniloc 2017 LLC et al</i>	IPR2018-01577	PTAB	Aug. 23, 2018

<i>Samsung Electronics America, Inc. et al v. Uniloc 2017 LLC et al</i>	IPR2018-01756	PTAB	Sep. 18, 2018
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## **V. THE LEVEL OF ORDINARY SKILL IN THE ART**

The Petition alleges that “a person of ordinary skill in the art (“POSITA”) would include someone who had, at the priority date of the ’508 Patent, (i) a Bachelor’s degree in Electrical Engineering, Computer Engineering, and/or Computer Science, or equivalent training, and (ii) approximately two years of experience working in hardware and/or software design and development related to MEMS (micro-electro-mechanical) devices and body motion sensing systems.” Pet. 7. Given that Petitioner fails to meet its burden of proof when purportedly applying its own definition of a person of ordinary skill in the art, Patent Owner does not offer a competing definition for purposes of this proceeding.

## **VI. PROSECUTION HISTORY**

The Petition neglects to mention it relies upon a reference the U.S. Patent Office has already found to be distinguishable from certain limitations also recited in the challenged claims. The ’508 patent is part of a family of related patents including U.S. Patent Nos. 8,712,723 and 7,881,902 (the ’723 and ’902 patents, respectively). These patents all share a common specification.

During prosecution of the application that issued as the related ’723 patent,



the Examiner cited the same Pasolini reference<sup>3</sup> either exclusively or primarily relied upon in the challenges presented in instant Petition. As the prosecution history reveals, Applicant successfully distinguished Pasolini and all other references of record from the claims that ultimately issued, including on the basis of certain claim limitations that also are cited in the '508 patent.<sup>4</sup>

The instant Petition relies exclusively on Pasolini in challenging claims 1–2 and 11–12; and it also relies exclusively on Pasolini for the remainder of the challenged claims when addressing certain limitations. For those claim limitations in which the Petition asserts only the Fabio reference (*e.g.*, the “cadence window” limitations), Fabio is distinguishable for analogous reasons addressed during prosecution of the related '723 patent, as will be shown. Consequently, Fabio does not cure the acknowledged deficiencies of Pasolini already recognized by the U.S. Patent Office.

The interest of finality weighs against revisiting the deficiencies of Pasolini and whether the cumulative disclosure in Fabio renders obvious what Pasolini admittedly fails to disclose. *See, e.g., Shire LLC v. Amneal Pharm., LLC*, 802 F.3d 1301, 1307 (Fed. Cir. 2015) (holding a patent challenger has “the added burden of

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<sup>3</sup> The prosecution history of the '723 patent references the printed publication (U.S. Serial App. Pub. No. 2007/0143068) of the same Pasolini reference that ultimately issued as U.S. Patent No. 7,463,997. The Petition opted to cite the issued patent in lieu of the printed publication.

<sup>4</sup> *See* Public File Wrapper of '723 patent, Response dated Jan. 29, 2013 (at p. 6 of 9) to Office Action dated Sept. 26, 2012 (*also filed as Exhibit 1002 in related-matter IPR2018-00389, at pp. 142 of 454*).

overcoming the deference that is due to a qualified government agency presumed to have properly done its job, which includes one or more examiners who are assumed to have some expertise in interpreting the references and to be familiar from their work with the level of skill in the art and whose duty it is to issue only valid patents.”); *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (upholding claim construction of the district court in limiting the scope of the earlier, already issued patent based on statements offered during prosecution of a related application that issued later).

## **VII. CLAIM CONSTRUCTION**

The petition should be rejected as relying upon incorrect claim constructions that are unreasonable in light of the intrinsic evidence. *See Mentor Graphics Corp., v. Synopsys, Inc.*, IPR2014-00287, 2015 WL 3637569, (Paper 31) at \*11 (P.T.A.B. June 11, 2015), *aff'd sub nom. Synopsys, Inc. v. Mentor Graphics Corp.*, 669 Fed. Appx. 569 (Fed. Cir. 2016) (finding Petitioner’s claim construction unreasonable in light of the specification, and therefore, denying Petition as tainted by reliance on an incorrect claim construction).

### **A. “cadence window”**

The Petition argues that the ’508 patent specification provides but one definition for “cadence window” as follows: “[a] cadence window is a window of time since a last step was counted that is looked at to detect a new step.” Pet. 8-9. Regardless whether this statement fully captures all disclosed embodiments of “cadence windows” disclosed in the ’508 patent (and Patent Owner does not concede that it does), its application here as a claim construction for “cadence

window” only confirms that the Petition must be denied as failing to prove obviousness. This is because Petitioner relies exclusively on Fabio’s validation interval TV, which Fabio defines as necessarily starting before the last step is counted. A window of time that necessarily starts before the last step is counted is definitively not “a window of time since a last step was counted” (as required by Petitioner’s construction).

**B. “dominant axis”**

Petitioner first offers an incorrect claim construction for “dominant axis” and then applies another in relying solely on Pasolini for the “dominant axis” limitations. The Petition proposes construing “dominant axis” to mean “the axis most influenced by gravity.” Pet. 8. In doing so, the Petition incorrectly conflates certain descriptions directed to *determining an orientation of the electronic device* with, instead, *assigning a dominant axis*. The claim language itself, and the remainder of the intrinsic evidence, proscribe such an interpretation.

Claim 1, for example, expressly distinguishes “continuously determining an orientation of the initial sensor” from the separately-recited step of “assigning a dominant axis.” Accordingly, the written description corresponding to one step cannot be attributed, instead, to the other. But that is precisely what the Petition attempts to do.

The ’508 patent uses the phrase “the axis most influenced by gravity” only in describing an example embodiment for determining *orientation*. EX1001, 6:7–21. That description states “[t]he *orientation* may be determined based upon the rolling averages of accelerations created by the rolling average logic 125.” *Id.* at 6:9–11

(emphasis added). A few lines down, that same paragraph states “[d]etermining an orientation of the electronic device 100 may include identifying a gravitational influence. The axis with the largest absolute rolling average *may* be the axis most influenced by gravity.” *Id.* at 6:13–17 (emphasis added). Notably, the Petition uses ellipses in place of the word “may” when quoting the above passage, presumably because Petitioner recognized that qualifying word kills Petitioner’s proposed construction and hence the underlying basis for the challenge. Pet. 5 (quoting EX1001, 6:16–21); *see also* Pet. 8 (again offering a partial quotation that omits the word “may”).

There simply is no unambiguous lexicography in the cited passage (or elsewhere) that states the assigned “dominant axis” *must* be the one that is most influenced by gravity. Rather, this passage observes that the rolling-average process *used to determine orientation* may, and hence may not, coincidentally be the axis most influenced by gravity. Petitioner’s proposed construction would impermissibly exclude those instances where the axis determined by a rolling-average process is not the axis most influenced by gravity.

In the Institution Decision in IPR2018-00387, the Board points to a separate description addressing an alternative embodiment (which the specification expressly distinguishes from the rolling-average process) as allegedly supporting the proposition that “a dominant axis, whether virtual axis or otherwise, is assigned on the basis of gravity: ‘most influenced by gravity’ and ‘approximately aligned to gravity.’” IPR2018-00387, Paper 8 at 9–10 (citing EX1001, 6:24–27). This too is

incorrect.<sup>5</sup> As a counter example, and as explained above, the '508 patent reveals that using a rolling-average process to determine orientation does not necessarily result in assigning a dominant axis that is most influenced by gravity. EX1001, 6:7–21.

The Board's emphasis of the statements "most influenced by gravity" and "approximately aligned to gravity" reveals another flaw in Petitioner's proposed construction. The specification uses those phrases in describing distinct axis of expressly-distinguished embodiments. *Id.* at 6:24–27 ("In alternative embodiments, the dominant axis does not correspond to ..., but rather to ...."). Thus, a construction that focuses only on one embodiment (as Petitioner proposes) would impermissibly exclude the other. This error is compounded by the fact that Petitioner's construction requires the dominant axis to be the one that is most influenced by gravity, while the description of the rolling-average embodiment reveals that is not required.

The Petition has not and cannot prove obviousness through application of an incorrect construction for "dominant axis." *See Mentor Graphics Corp. v. Synopsys, Inc.*, IPR2014-00287, 2015 WL 3637569, (Paper 31) at \*11 (P.T.A.B. June 11, 2015), *aff'd sub nom. Synopsys, Inc. v. Mentor Graphics Corp.*, 669 Fed. Appx. 569 (Fed. Cir. 2016). This provides an independent basis to deny the Petition.

Even if the Board were to apply Petitioner's proposed construction for

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<sup>5</sup> Neither party has offered and defended construing "assigning a dominant axis" to mean "a dominant axis . . . is assigned on the basis of gravity." This would not be a proper definition for what is recited, but rather it would be an impermissible rewrite of the claim language that merely inserts additional words.

“dominant axis,” however, the Petition should nevertheless be denied for failing to apply such a construction in presenting its challenges, as explained further below in addressing specific claim language.

**C. “a dominant axis logic to continuously determine an orientation of a device, to assign a dominant axis, and to update the dominant axis as the orientation of the device changes”**

No construction is necessary here for the recitation “a dominant axis logic to continuously determine an orientation of a device, to assign a dominant axis, and to update the dominant axis as the orientation of the device changes.”

The Petition proposes a construction that substitutes the phrase “dominant axis logic” with the phrase “hardware, software, or both.” Petitioner’s rewrite of the claim language serves no purpose, impermissibly omits limiting claim language, and unnecessarily injects ambiguity. Here, the claim language itself provides definitional context for the “dominant axis logic” by reciting, for example, that it “continuously determine[s] an orientation of a device, to assign a dominant axis, and to update the dominant axis as the orientation of the device changes.”

No party has requested that the Board construe this term here under 35 U.S.C. § 112(6).<sup>6</sup> Accordingly, Patent Owner does not address 35 U.S.C. § 112(6) or Petitioner’s hypotheticals.

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<sup>6</sup> While the Petition repeatedly offers the statement “to the extent Patent Owner overcomes the presumption against construction under 35 U.S.C. 112, sixth paragraph...” (e.g., Pet. 10), the Petitioner provides no authority or evidence for its alleged “presumption” or its implicit shifting of its burden of proof here.

**D. “a counting logic to count periodic human motions by monitoring accelerations relative to the dominant axis”**

The Petition takes the same erroneous approach to the term “counting logic” that it does with the “dominant axis logic” term addressed in the preceding section. Accordingly, the proposed construction in the Petition should be rejected as unnecessary for analogous reasons. To be clear, no party has requested that the Board construe this term under 35 U.S.C. § 112(6).<sup>7</sup> Accordingly, Patent Owner does not address 35 U.S.C. § 112(6) or Petitioner’s hypotheticals.

**E. “a counting logic to identify and count periodic human motions”**

The proposed construction in the Petition should be rejected as unnecessary for analogous reasons presented above. *See* §VI.C, *supra*. To be clear, no party has requested that the Board construe this term under 35 U.S.C. § 112(6).<sup>8</sup> Accordingly, Patent Owner does not address 35 U.S.C. § 112(6) or Petitioner’s hypotheticals.

**F. “a cadence logic to continuously update a dynamic cadence window”**

The proposed construction in the Petition should be rejected as unnecessary for analogous reasons presented above. *See* §VI.C, *supra*. To be clear, no party has requested that the Board construe this term here under 35 U.S.C. § 112(6).<sup>9</sup> Accordingly, Patent Owner does not address 35 U.S.C. § 112(6) or Petitioner’s hypotheticals.

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<sup>7</sup> *See* n.6, *supra*.

<sup>8</sup> *See* n.6, *supra*.

<sup>9</sup> *See* n.6, *supra*.

**G. “a mode logic, to switch the device from a non-active mode to an active mode after a number of periodic human motions are detected within appropriate cadence windows by the counting logic”**

The proposed construction in the Petition should be rejected as unnecessary for analogous reasons presented above. *See* §VI.C, *supra*. To be clear, no party has requested that the Board construe this term under 35 U.S.C. § 112(6).<sup>10</sup> Accordingly, Patent Owner does not address 35 U.S.C. § 112(6) or Petitioner’s hypotheticals.

**VIII. PETITIONER FAILS TO MEET ITS BURDEN OF PROVING OBVIOUSNESS**

Petitioner has the burden of proof to establish entitlement to relief. 37 C.F.R. §42.108(c) (“review shall not be instituted for a ground of unpatentability unless ... there is a reasonable likelihood that at least one of the claims challenged ... is unpatentable”). The Petition should be denied as failing to meet this burden.

The Petition raises the following obviousness challenges:

Ground	Claims	Reference(s)
1	1–2 and 11–12	<i>Pasolini</i> <sup>11</sup>
2	6–8, 15–16, and 19	<i>Fabio</i> <sup>12</sup>
3	3–4 and 13–14, and 20	<i>Pasolini</i> and <i>Fabio</i>

**A. Petitioner fails to prove Fabio renders obvious the “cadence window” limitations of independent claim 6**

The Petitioner fails to prove obviousness of “switching the device from the

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<sup>10</sup> *See* n.6, *supra*.

<sup>11</sup> EX1005, U.S. Patent No. 7,463,997.

<sup>12</sup> EX1006, U.S. Patent No. 7,698,097.

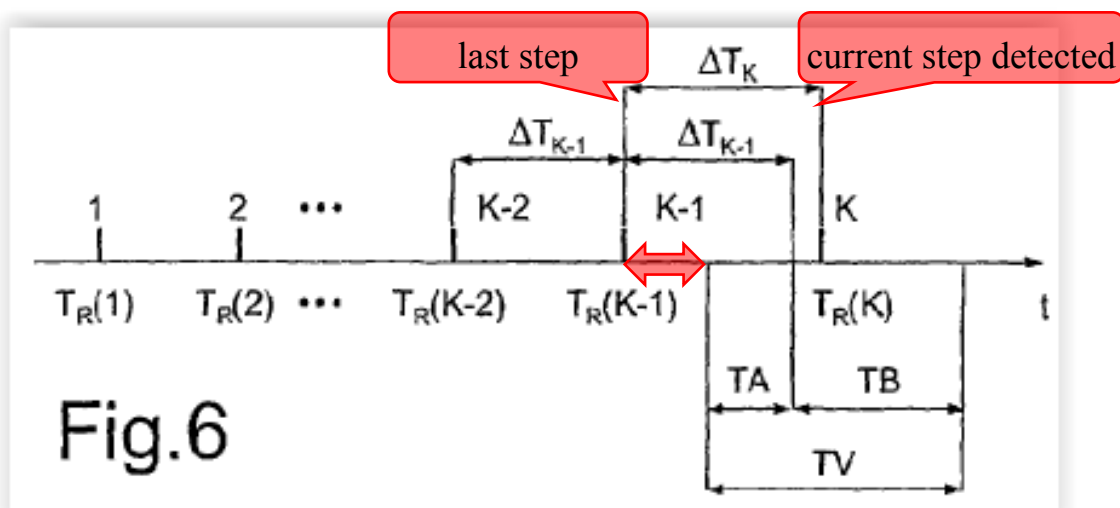


non-active mode to an active mode, after identifying a number of periodic human motions within appropriate cadence windows; and counting a periodic human motion when an acceleration measurement that meets motion criteria is within the cadence window,” as recited in independent claim 6.

**1. Petitioner fails to prove Fabio’s validation interval (TV) maps onto the distinct definition Petitioner offers for “cadence window”**

The Petition relies exclusively on Fabio’s validation interval (sometimes abbreviated as “TV”) as allegedly mapping onto the claimed “cadence window” limitations. Pet. 43. Several independently-fatal deficiencies arise from Petitioner’s exclusive reliance on Fabio’s TV, particularly under the construction for “cadence window” relied upon in the Petition (i.e., “a window of time since a last step was counted that is looked at to detect a new step”).

Fabio describes its TV with reference to its Figure 6, which is copied and annotated below. *See, e.g.*, EX1006, Fig. 6 and accompanying description including, for example, 4:28–49.



Fabio's TV is *retrospective* at least in that it is used to validate only the immediately preceding step (shown in Fig. 6 as K-1), as opposed to the current step detected (shown in Fig. 6 as K): "[m]ore precisely, the last step recognized is validated if the instant of recognition of the current step  $T_R(K)$  falls within a validation interval TV[.]" *Id.* Unless and until the last step is validated by the current step in the manner disclosed, the last step is not counted. *Id.* 5:10–39. The current step (K), in turn, is dependent upon the next step (K+1) for validation and counting. *Id.* The final step detected will not be counted because it cannot be validated. *Id.*

Accordingly, Fabio's validation interval TV is not "a window of time since a last step was counted" (as required by Petitioner's construction) at least because Fabio defines its TV as necessarily starting before the last step is counted. *Id.*; see also EX2001 ¶¶ 32–35. Indeed, Fabio's TV is used in determining *whether* to count the last step. *Id.* The Petition should therefore be denied because Fabio's TV does not satisfy the construction for "cadence window" relied upon in the Petition. This deficiency is independently fatal to the challenge of independent claim 6 and all challenged claims depending therefrom.

**2. Petitioner has not and cannot cure Fabio's deficiencies by offering a new, undefended, and inconsistent definition for "cadence window"**

Evidently recognizing this deficiency, the Petition appears to abandon its own construction for "cadence window" by inconsistently arguing, instead, that "the '508 patent's 'cadence window' and Fabio's 'validation interval' are both defined with respect to the time that an immediately preceding step *was recognized*." Pet. 46 (emphasis added); *cf. id.* at 8. This inconsistent theory is itself independently fatal.

Petitioner cannot have it both ways. The “cadence window” cannot be defined by alleged lexicography in the specification in terms of “since a last step *was counted*” and yet be applied, inconsistently, in terms of when “an immediately preceding step *was recognized*.” As explained above (in §VII.A.1, *supra*), Fabio’s retrospective validation process expressly distinguishes the moment when the last step is detected/recognized from when that step is later ultimately counted (if at all). *See, e.g.*, EX1006, 5:10–39. This explicit distinction in terms of timing cannot be glossed over by simply rewriting the alleged lexicography in the ’508 patent specification that Petitioner identifies and relies upon for the “cadence window” term.

Even if the Board were to apply Petitioner’s inconsistent and undefended rewrite of the alleged lexicography the Petition identifies, this too would fail to prove obviousness. Fabio further defines its TV as necessarily excluding at least the time interval (indicated by a red block-arrow annotation to Fig. 6 copied above) commencing since detection of the last step (K-1) but before commencement of TV. Although this interval is excluded by Fabio’s design, it nevertheless would satisfy a modified construction that redefines the timing aspect in terms of “since the last step [K-1] *was recognized*.” *See, e.g.*, EX1006, Fig. 6 and accompanying description including, for example, 4:28–49.

Fabio also recognizes that in certain instances its system might detect a “false positive” step. *Id.* 1:39–44. This might occur, for example, where the system detects an irregularity resulting, for example, from the user tripping or otherwise making a quick stutter step. *See, e.g., id.* at 1:47–51; 5:56–61; 6:9–11; 7:16. If such a “false positive” detection occurs since detection of the last step (K-1) but before TV

commences, *then the last step would not be counted*. This is true even if the last step was in fact a “true positive” detection that had occurred sometime within the TV used to detect that step. This retrospective aspect of Fabio’s system, which results in excluding certain “true positive” detections, bears no resemblance to any of the inconsistent constructions of “cadence window” offered by Petitioner, much less to the description of that term and its associated real-time counting offered in the specification and reflected in the claims.

Thus, even under the inconsistent and undefended construction “a window of time since a last step was [recognized] that is looked at to detect a new step,” there is no proof of obviousness by Fabio’s VT at least because certain “true positive” steps occurring within VT would not be counted. This would further run afoul of the recited “counting” step, which also references and limits the “cadence window” term.

**3. Petitioner has not proven obviousness for the “switching” step introducing the “cadence window” term**

The Petition relies solely on Fabio’s alleged transitioning from the “first counting procedure” to the “second counting procedure” for the “switching” step recited in independent claim 6. Pet. 43. In doing so, Petitioner fails to prove that the alleged transitioning involves “switching the device from the *non-active* mode to an *active mode*,” much less that such a step must occur after “identifying a number of human motions within appropriate cadence windows.”

First, Petitioner fails to prove that Fabio’s first counting procedure is a “non-active mode” as claimed. The only attempted defense the Petition offers for its

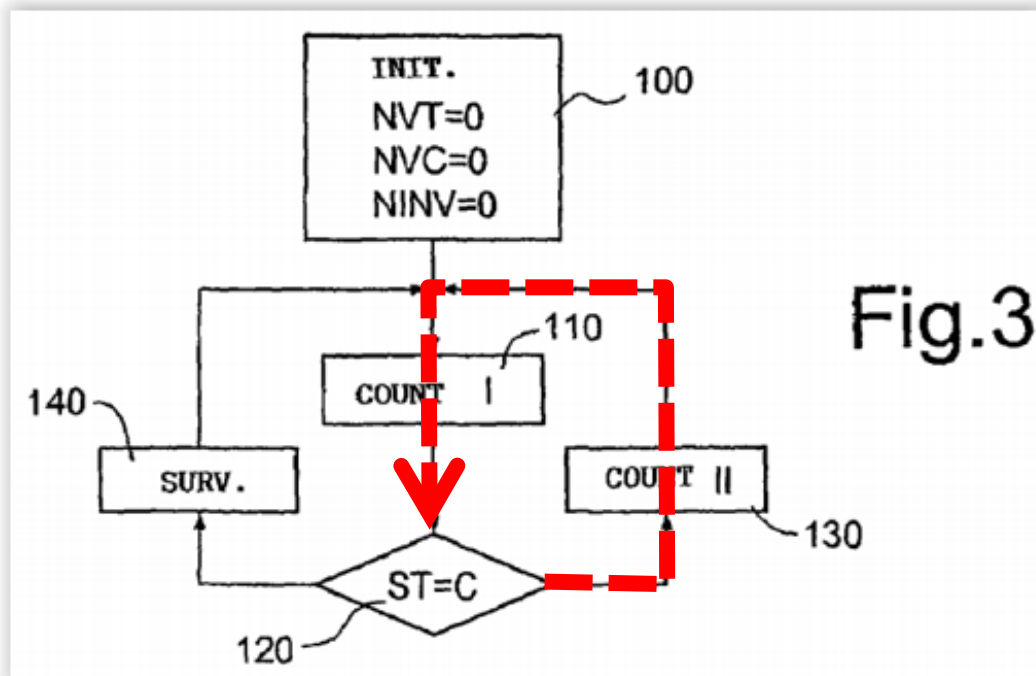
mapping is that Fabio allegedly describes its first counting procedure as “motion is detected but the steps are buffered not counted.” Pet 40.<sup>13</sup> If the claimed “non-active mode” requires buffering but not counting steps, as Petitioner alleges, then Petitioner’s mapping must fail because Fabio’s first *counting* procedure clearly involves counting steps, which is not surprising given the name of that procedure.

Petitioner’s theory is further undermined by the declaration it cites. The declaration offers an alleged summary of Fabio’s first counting procedure that includes the following statement: “if steps meet regularity threshold, add buffered steps to total steps and move to the second counting procedure.” EX1003, p. 55; *see also id.* at p. 30 (same). The summary also provides annotations to Figure 4 of Fabio emphasizing that  $N_{VT}$  is a count variable that is updated *during the first counting procedure*. *Id.*; *see also* EX1006, 5:32–36. The Petition repeats this summary verbatim. Pet. 42 (citing EX1003, p. 55). The Petition and its attached declaration, therefore, admit that steps are indeed counted as part of the first counting procedure, and that this occurs *before* moving to the second counting procedure. This defeats the contrary assertion in the Petition—*identified as the underlying basis for the mapping*—that Fabio’s describes its first counting procedure as “motion is detected but the steps are buffered not counted.” Pet 40.

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<sup>13</sup> In addressing the “switching” step, as the sole alleged support for the mapping of Fabio’s first counting procedure onto is the claimed “non-active mode,” Petition cites to the discussion at Section 6.1 of the Petition. Pet. 43.

Second, the Petition is deficient because it fails to prove that Fabio discloses “switching” from the first counting procedure to the second counting procedure, much less “switching the device from the non-active mode to an active mode,” as claimed. Fabio does not disclose such a device switch. Rather, as shown in Figure 3 of Fabio (copied and annotated below), the *first* counting procedure is included as a part of every process flow, while the *second* counting procedure is simply included as a secondary process in certain instances.



EX1006, Fig. 3 (red-arrow annotation added); *see also id.* at 4:24–26 and 6:21–23; EX2001 ¶¶ 30–31. Merely adding a secondary counting procedure in certain instances is distinguishable from “switching the device from the non-active mode to an active mode,” as recited in claim 6.

The failure in the Petition to prove Fabio discloses “switching [of] the device” is further confirmed when one compares the similar descriptions in Fabio of the first

and second counting procedures. For example, Fabio describes the second counting procedure as including “a step-recognition test is carried out (block 315) [that is] identical to the step-recognition test of block 225 of FIG [4]”—i.e., a block describing the first counting procedure.<sup>14</sup> *See, e.g.*, EX1006, Figure 4, 4:24–26 and 6:21–23. The largely overlapping nature of the processes carried out in the first and second counting procedures in Fabio is distinguishable from the “switching” step, as disclosed in the ’508 patent and recited in claim 6.

Third, the Petition fails to prove that the alleged “switching” is “after identifying a number of periodic human motions within appropriate cadence windows.” The Petition alleges that Fabio “teaches switching the pedometer from the first counting procedure 110 (e.g., a non-active mode) to a second counting procedure 130 (e.g., an active mode) after a condition of stepping regularity has been met” and that “[t]he condition of regularity is determined based on the detected steps falling within a validation interval TV (i.e., a cadence window).” Pet. 43. As explained above, however, the Petition fails to prove that Fabio’s validation interval TV satisfies the “cadence window” term recited in claim 6. *See* §§VIII.A.1–2, *supra*.

For each one of the foregoing reasons, the Petition should be denied as failing to prove that Fabio alone and unmodified discloses “switching the device from the non-active mode to an active mode, after identifying a number of periodic human motions within appropriate cadence windows,” as recited in independent claim 6.

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<sup>14</sup> Given that block 225 is shown only in Figure 4, it is presumed that the statement “block 225 of FIG 3” was a clerical error.

**4. Petitioner has not proven obviousness for the “counting” step as applied to the “cadence window” term**

The Petition fails to prove obvious of the step “counting a periodic human motion when an acceleration measurement that meets motion criteria is within the cadence window,” as recited in claim 6. In addition to the deficiencies identified above (§§VIII.A.1–3) concerning the erroneous mapping of Fabio’s TV onto the “cadence window” term, the Petition glosses over the word “when” in this limitation, which at least temporarily interrelates the “counting” with the “acceleration measurement that meets motion criteria is within the cadence window.”

The Petition cites to a few lines of Fabio allegedly disclosing the detection of positive and negative peaks in an acceleration signal. Pet. 65 (citing EX1006, 4:12–21). The cited passage is directed to Fabio’s first counting procedure and, more specifically, to the “step-recognition test of block 225” of Figure 4. That passage does not state counting *when* the “step-recognition test” passes. On the contrary, that passage reveals that even if the “step-recognition test is passed,” a first validation test is executed. *Id.* at 4:12–21. If the first validation test is passed, then a new first test on regularity of the sequence of steps recognized is executed. *Id.* at 5:10–14. In short, the delayed and retrospective counting in Fabio, which may not occur even if the cited “step-recognition test of block 225” passes, is distinguishable from the claimed “counting,” which the claim language temporarily interrelates with the “acceleration measurement.”

The theory set forth in the Petition also cannot withstand scrutiny when one considers the written description of the ’508 patent. For example, FIGURE 2 and its



corresponding discussion reveals, consistent with the claim language, that counting of a step considers whether such a step is “within” *its respective cadence window*. This is distinguishable from, instead, counting a step only if a distinct and preceding step falls within its preceding cadence window.

**B. Petitioner fails to prove Fabio itself renders obvious the “cadence window” limitations of independent claim 15**

Because the challenge of independent claim 15 expressly relies upon the arguments addressing claim 6, the challenge of independent claim 15 is tainted by the same deficiencies and should be denied for the same reasons. For example, in addressing the recitation “a mode logic, to switch the device from a non-active mode to an active mode after a number of periodic human motions are detected within appropriate cadence windows by the counting logic,” the Petition relies upon its analysis addressing what Petitioner refers to as limitation [6.2] of independent claim 6. Pet. 55. The referenced analysis in the Petition is deficient at least for analogous reasons to those articulated above in addressing the challenge of claim 6. *See* §§VIII.A.1–3, *supra*.

**C. Petitioner fails to prove Fabio renders obvious the “cadence window” limitations recited in certain dependent claims**

The Petition is also deficient in its exclusive reliance on Fabio’s validation interval TV for the “cadence window” terms recited in certain challenged dependent claims.

Dependent claim 3, for example, recites “maintaining a cadence window, wherein the cadence window is continuously updated as an actual cadence changes

and; counting a periodic human motion when an acceleration measurement that meets motion criteria is within the cadence window.”

Dependent claim 13, for example, recites “a cadence logic to continuously update a dynamic cadence window; and the counting logic to count a periodic human motion when an acceleration measurement that meets motion criteria is taken within the cadence window.”

Dependent claim 19, for example, recites “a cadence logic, to set the appropriate cadence windows.”

Dependent claim 20, for example, recites “wherein the cadence logic adjusts the cadence windows based on a measured cadence associated with the periodic human motion.”

For each of the above limitations, the Petition purports to rely on the challenge of independent claim 6 that maps Fabio’s TV onto the “cadence window” term. *See, e.g.*, Pet. 59 (claim 19), 64 (claim 3); 69 (claim 13); 72 (claim 20). The referenced analysis in the Petition is deficient at least for analogous reasons to those articulated above in addressing the challenge of claim 6. *See* §§VIII.A.1–3, *supra*.

**D. Petitioner fails to prove Pasolini renders obvious “assigning a dominant axis” as recited in claim 1**

The Petition first proposes construing “dominant axis” to mean “the axis most influenced by gravity.” Pet. 8. As explained above, this theory should be rejected as predicated upon an incorrect claim construction. *See* §VI.B; *see also Mentor Graphics Corp. v. Synopsys, Inc.*, IPR2014-00287, 2015 WL 3637569, (Paper 31) at \*11 (P.T.A.B. June 11, 2015), *aff’d sub nom. Synopsys, Inc. v. Mentor Graphics*

*Corp.*, 669 Fed. Appx. 569 (Fed. Cir. 2016).

The Petition is also deficient in that it presents arguments concerning the “dominant axis” term that are inconsistent with the claim construction Petitioner states is the basis for the challenge. The Petition relies exclusively on Pasolini’s main vertical axis, which Petitioner alleges “is the axis most aligned with gravity.” Pet. 28–29. The Petition offers no argument or evidence to support a conclusion that “the axis *most aligned* with gravity” is necessarily “the axis *most influenced* by gravity,” as required per Petitioner’s construction.

Moreover, as explained above in addressing claim construction (§VI.B), the ’508 patent specification refutes conflating those different axis descriptions by associating one with certain instances of the rolling-average embodiment and the other with an expressly-distinguished alternative embodiment. *Id.* at 6:24–27 (“In alternative embodiments, the dominant axis does not correspond to ..., but rather to ....”).

The Petition should not only be rejected for its inconsistent application of an incorrect claim construction, the Petition fails to identify anything in Pasolini that even remotely resembles “assigning a dominant axis,” as recited in Claim 1. It appears undisputed that Pasolini relies on a *fixed* vertical axis or “axis Z” for purposes of its calculations. *See, e.g.*, Pet. 18, 25, 30, 31 (repeatedly citing EX1005, 3:13–19); EX2001 ¶¶ 6–13 and 24 (“What is taught in Pasolini is what was standard at the time of the invention, a static system that always assumes that the Z axis is dominant.”).

Pasolini does not disclose that its system *assigns* its fixed vertical axis as a

process separate and apart from determining an orientation of the inertial sensor, much less that it assigns a “dominant axis” that is subject to change, as disclosed and claimed in the ’508 patent (*e.g.*, “updating the dominant axis as the orientation of the inertial sensor changes,” as recited in claim 1). EX2001 ¶¶ 6–13 and 22–24. The Petition does not argue (and has thus waived the argument) that it would have been obvious to modify Pasolini to forgo using its fixed axis, which is understandable because this would render Pasolini inoperable for its intended purpose.

Patent Owner’s declarant, Mr. Easttom, testified that this difference (between Pasolini’s use of a fixed vertical axis and the ’508 patent’s teaching of assigning a dominant axis that changes over time) is “not ... trivial” and that a “POSA would immediately understand the significant advantages that the ’508 patent has over” the Fabio system. EX2001 ¶¶ 6–13; *see also id.* at ¶¶ 22–24. One of the advantages he identified is “the ability for any axis of the sensor to be dominant based on the specific conditions at the time.” *Id.* at ¶ 24.

The prosecution history of the related ’723 patent further confirms that Pasolini is deficient with respect to claim 1 of the ’508 patent. In the Notice of Allowance for the ’723 patent, the Examiner expressly acknowledged that Pasolini (among the other references cited) fails to disclose, for example, “assigning a dominant axis with respect to gravity based on an orientation of the inertial sensor,”

as recited in claim 1 of that patent.<sup>15</sup> See '723 Patent File History, Notice of Allowance dated May 6, 2013, at p.5. Here, claim 1 of the '508 patent similarly recites, in part, “continuously determining an orientation of the inertial sensor; assigning a dominant axis; [and] updating the dominant axis as the orientation of the inertial sensor changes.”

Given these similarities in claim language and the Examiner’s express findings in the file history of the related '723 patent, the Petition should be denied as failing to overcome “the added burden of overcoming the deference that is due to a qualified government agency presumed to have properly done its job, which includes one or more examiners who are assumed to have some expertise in interpreting the references and to be familiar from their work with the level of skill in the art and whose duty it is to issue only valid patents.” *Shire LLC v. Amneal Pharm., LLC*, 802 F.3d 1301, 1307 (Fed. Cir. 2015); *see also Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (upholding claim construction of the district court in limiting the scope of the earlier, already issued patent based on statements offered during prosecution of a related application that issued later).

For at least the foregoing reasons, the Petition fails to prove obviousness for the expressly-distinguished steps of “continuously determining an orientation of the

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<sup>15</sup> Claim 1 of the related '723 patent confirms, consistent with the specification, at least that (1) the assignment of the dominant axis is based at least in part on *orientation*, and (2) that the orientation of the dominant axis is not necessarily the gravitational axis but rather it is merely represented relative to the gravitational axis.

inertial sensor; [and] assigning a dominant axis,” as recited in claim 1.

These deficiencies also taint the analysis all other limitations reciting the “dominant axis” term recited in claim 1 (*e.g.*, “updating the dominant axis as the orientation of the inertial sensor change; and counting periodic human motions by monitoring accelerations relative to the dominant axis.”).

**E. Petitioner fails to prove Pasolini renders obvious the “updating the dominant axis as the orientation of the inertial sensor changes” as recited in claim 1**

The Petition repeats its error with respect to the “dominant axis” term in relying solely on Pasolini for the limitation “updating the dominant axis as the orientation of the inertial sensor changes,” as recited in claim 11. The analysis is therefore deficient for the reasons articulated above. *See* §VIII.D, *supra*; *see also* EX2001 ¶ 25.

In addition, the Petition defeats its own theory by asserting “as discussed in sections [1.1] and [1.2], Pasolini’s embodiments teach determining the orientation of the accelerometer (*i.e.*, an inertial sensor) by identifying the axis most aligned with gravity (*i.e.*, assigning the dominant axis).” Pet. 29. Even if Petitioner’s characterization of Pasolini is correct (and Patent Owner does not concede that it is), it only highlights the distinction between Pasolini and the claim language.

The claim language recites a cause and effect relationship between the changes in the orientation of the inertial sensor (the cause) and updating the dominant axis (the effect). The same principle can be also stated as follows: a detected change in orientation of the inertial sensor is used to update the dominant

axis. This is consistent with the claim language as a whole, which first recites (1) “continuously determining an orientation of the inertial sensor,” then recites (2) “assigning a dominant axis,” and then recites (3) “updating the dominant axis as the orientation of the inertial sensor changes.”

The specification confirms this understanding of the claim language. For example, the outset of the detailed description states “[i]n one embodiment, a dominant axis is assigned *after* determining an orientation of an inertial sensor. The orientation of the inertial sensor is continuously determined, and the dominant axis is updated as the orientation of the inertial sensor changes.” EX1001, 2:8–13 (emphasis added).

According to Petitioner, “Pasolini’s embodiments teach determining the orientation of the accelerometer (i.e., an inertial sensor) by identifying the axis most aligned with gravity (i.e., assigning the dominant axis).” Pet. 29. This turns the claim language on its head by using the alleged dominant axis to determine the orientation of the inertial sensor. The challenge of claim 1 (and its challenged dependent claims) should be denied of this additional independent reason.

Petitioner also quotes the statement in Pasolini that “the main vertical axis can be identified at each acquisition of a new acceleration sample, block 30 of FIG. 4, so as to take into account variations in the orientation of the pedometer device 1, and consequently of the accelerometer 2 arranged inside it.” Pet. 29 (quoting EX1005, 8:11–24). The Petition then cites its attached declaration as alleged support for the following characterization of this disclosure in Pasolini: “a POSITA would have thus recognized that as the pedometer (and by extension the accelerometer inside it) is

rotated, a new acceleration sample is acquired to both identify the main vertical axis (i.e., the dominant axis) and count the steps that occur along this axis.” Pet. 29–30 (citing EX1003, p. 39).

Merely acquiring an acceleration sample to identify a main vertical axis, however, does not disclose or suggest, instead, “updating the dominant axis as the orientation of the inertial sensor changes,” as recited in claim 1. This is at least because use of the article “the” in the couplet “the orientation” makes explicit reference to the preceding step “continuously determining *an* orientation of the inertial sensor.” Accordingly, the update to the dominant axis is based on the *determined* change in orientation of the inertial sensor, not the other way around.

That the cited passage of Pasolini states the new acceleration sample “take[s] into account variations in the orientation of the pedometer device” does not mean that the orientation itself is necessarily determined once it changes and then the new determined orientation used to update the dominant axis. The Petition argues no argument or evidence to the contrary. The challenge of claim 1 (and its challenged dependent claims) should be denied of this additional independent reason.

**F. The Petition fails to prove obviousness of “counting periodic human motions by monitoring accelerations relative to the dominant axis” as recited in claim 1**

The Petition relies solely on *Pasolini* for the limitation “counting periodic human motions by monitoring accelerations relative to the dominant axis,” as recited in claim 1. The Petition first references its analysis of other claim limitations identified as [1.2] and [1.3] in the Petition. Pet. 30. In doing so, the Petition



emphasizes that the analysis asserts the dominant axis is purportedly the one most aligned with gravity (as opposed to most influenced by gravity). *Id.* This analysis is deficient for the reasons articulated above addressing the referenced limitations of claim 1. *See* §§VIII.D–E, *supra*.

Petitioner then quotes the disclosure in Pasolini that an “accelerometer 2 detects the component along the detection axis z of the vertical acceleration generated during the step and produces a corresponding acceleration signal A.” Pet. 30 (quoting EX1005, 3:13–19). Merely producing an acceleration signal in response to detecting vertical acceleration along *a fixed* “axis Z” does not disclose or suggest “counting periodic human motions by monitoring accelerations relative to the dominant axis,” as recited in claim 1, particularly given that the ’508 patent confirms (both in the written description and in the claims) that the dominant axis is subject to change over time—as the word “dominant” itself implies.

For the foregoing additional and independent reasons, the challenge of independent claim 1 (and hence its challenged dependent claims) should be denied as failing to prove obviousness of “counting periodic human motions by monitoring accelerations relative to the dominant axis.”

**G. Petitioner fails to prove Pasolini renders obvious the “dominant axis” terms recited in independent claim 11**

The Petition applies the same incorrect claim construction in addressing the “dominant axis” terms recited in independent claim 11 (*e.g.*, “a dominant axis logic, to continuously determine an orientation of a device, to assign a dominant axis, and to update the dominant axis as the orientation of the device changes.”).

First, in addressing the claim language “a dominant axis logic ... to assign a dominant axis,” the Petition refers solely to its analysis of what the Petition refers to as limitation [1.2] of claim 1. Pet. 34. That analysis, and indeed all analysis in the Petition for limitations reciting the “dominant axis” term, is deficient at least for the reasons articulated above in addressing analogous language recited in claim 1. *See* §VIII.D, *supra*; *see also* EX2001 ¶¶ 26–27.

Second, in addressing the claim language “to update the dominant axis as the orientation of the device changes,” the Petition refers to its analysis of what the Petition refers to as limitation [1.3] of claim 1. That analysis is deficient at least for reasons articulated in the preceding section addressing claim 1. *See* §VIII.E, *supra*; *see also* EX2001 ¶¶ 26–27.

For each of the foregoing and independent reasons, the challenge of independent claim 11 (and hence its challenged dependent claims) should be denied.

**H. The Petition fails to prove obviousness of “a counting logic to count periodic human motions by monitoring accelerations relative to the dominant axis,” as recited in claim 11**

In addressing the claim language “a counting logic to count periodic human motions by monitoring accelerations relative to the dominant axis,” the Petition expressly relies on its analysis of what the Petition refers to as limitation [1.4] of claim 1. Pet. 36. That analysis is deficient at least for the reasons articulated above in addressing analogous language recited in claim 1. *See* §VIII.F, *supra*.

**I. The Petition fails to prove obviousness of any dependent claim**

The deficiencies of the Petition articulated above concerning the challenged

independent claims apply also taint the analysis of the challenged dependent claims. Accordingly, the Petition should be denied in its entirety. In addition, Patent Owner has addressed above certain deficiencies in the Petition concerning claim language recited in dependent claims.

**J. The Petition fails to prove obviousness of “wherein the cadence logic adjusts the cadence windows based on a measured cadence associated with the periodic human motion” as recited in claim 20**

In addressing the claim language “wherein the cadence logic adjusts the cadence windows based on a measured cadence associated with the periodic human motion,” the Petition expressly relies on its analysis of what the Petition refers to as limitations [19.0-19.1] of claim 19. Pet. 72. The Petition’s [19.0-19.1] analysis in turn expressly relies on its analysis of what the Petition refers to as limitation [6.2] of claim 6. Pet. 59. The Petition further expressly relies on its analysis of what the Petition refers to as limitation [3.1] of claim 3. Pet. 72. The Petition’s [3.1] analysis in turn also expressly relies on its analysis of what the Petition refers to as limitation [6.2] of claim 6. Pet. 64. The above analysis is deficient at least for the reasons articulated above in addressing claim 6. *See* §§VIII.A.1–3, *supra*.

Moreover, the Petition merely alleges in conclusory fashion, and without any evidence or analysis, that: “Because the validation interval for each step is updated based on the timing and duration of the immediately preceding step, a POSITA would have understood that the validation interval (i.e., the cadence window) is adjusted based on a measured cadence associated with the periodic human motion.” Pet. 72. And for alleged support, the Petition cites to its expert, however, its expert’s declaration merely parrots the conclusory allegation stated above. *Compare* Pet. 72 with EX1003, p. 94-95.

But the law is clear that Petitioner may not rely on conclusory testimony of a declarant as to what would have been common knowledge at the time. *K/S HIMPP v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1365-66 (Fed. Cir. 2014) (finding the P.T.A.B. correctly rejected conclusory assertions of what would have been common knowledge in the art). Petitioner cannot justify its impermissible hindsight reconstruction merely by offering conclusory statements concerning what would have been obvious based on alleged extraneous knowledge of a POSITA. *Alza Corp. v. Mylan Labs., Inc.*, 464 F.3d 1286, 1290 (Fed. Cir. 2006) (“[L]egal determinations of obviousness, as with such determinations generally, should be based on evidence rather than on mere speculation or conjecture.”).

As discussed in VIII.A.1, *supra*, Fabio defines its validation interval (TV) as necessarily starting ***before the last step is counted***. EX1006, 5:10–39; see also EX2001 ¶¶ 32–35. Indeed, Fabio’s validation interval is used in determining *whether* to count the last step. Therefore, Fabio’s validation interval is not “adjusted based on a measured cadence associated with the periodic human motion”, as the Petition merely argues in conclusory fashion.

#### **IX. THE CONSTITUTIONALITY OF *INTER PARTES* REVIEW IS THE SUBJECT OF A PENDING APPEAL**

In a pending appeal to the Federal Circuit, *Polaris Innovations Ltd. v. Kingston Technology*, No. 18-01768, Dkt. No. 27, the patent owner Polaris argued that the Board’s appointments of administrative patent judges violate the Appointments Clause of Article II, and that their decisions must be set aside, because administrative patent judges are “appointed by the Secretary of Commerce, in consultation with the Director” of the USPTO, but without appointment by the President and confirmation by the Senate in violation of Article II, Section 2, Clause

2 of the Constitution. Out of an abundance of caution, Patent Owner hereby adopts this constitutional challenge now to ensure the issue is preserved pending the appeal.

**X. CONCLUSION**

For at least the reasons set forth above, Uniloc respectfully requests that the Board deny all challenges in the instant Petition.<sup>16</sup>

Date: November 29, 2018

Respectfully submitted,

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<sup>16</sup> Patent Owner does not concede, and specifically denies, that there is any legitimacy to any arguments in the instant Petition that are not specifically addressed herein.

**CERTIFICATE OF COMPLIANCE**

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that this Preliminary Response to Petition complies with the type-volume limitation of 37 C.F.R. § 42.24(b)(1) because it contains fewer than the limit of 14,000 words, as determined by the word-processing program used to prepare the brief, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a)(1).

Date: November 29, 2018

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Attorney for Patent Owner

**CERTIFICATE OF SERVICE**

Pursuant to 37 C.F.R. §§ 42.6(e), the undersigned certifies that an electronic copy of the foregoing PATENT OWNER'S PRELIMINARY RESPONSE was served, along with any accompanying exhibits not previously served, via the Patent Review Processing System (PRPS) and/or via email to Petitioner's counsel at the following addresses identified in the Petition's consent to electronic service:

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