

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARASHI VISION (U.S.) LLC (D/B/A INSTA360),
Petitioner,

v.

GOPRO, INC.,
Patent Owner

Case No. IPR2024-01052
U.S. Patent No. 11,336,832

PATENT OWNER'S REQUEST FOR DIRECTOR REVIEW

Table of Contents

I.	INTRODUCTION.....	1
II.	LEGAL STANDARD.....	1
III.	ARGUMENT	1
A.	The Board Misapprehended Thomason’s Disclosure Regarding Determination of a Viewing Window (Claims 7-8 and 17-18)	1
1.	The Board’s “Suggestion” Finding Required, But Lacked, A Motivation Analysis	4
2.	The Board Erred By Ignoring Unrebutted Evidence Of Unpredictable Results	5
3.	The Board Erred By Credited Petitioner’s Conclusory Expert Testimony, While Ignoring Technically Grounded Testimony From PO’s Expert.....	6
4.	The Board's Pacurariu Finding Does Not Cure the Deficiency.....	8
B.	The Board’s Voss Analysis Rests on an Erroneous Claim Construction (Claims 7-8 and 17-18).....	9
1.	The Viewing Window of Claim 1 Must Define The Extents of Horizon Leveled Visual Content.....	9
2.	The Board’s Interpretation Improperly Allows Additional Cropping Of The Viewing Window.....	11
3.	Voss Does Not Meet The Claims Properly Interpreted	12
C.	The Board Failed To Properly Weigh The Objective Indicia	13
IV.	RELIEF REQUESTED.....	15

I. INTRODUCTION

GoPro, Inc. (“PO”) requests Director Review of the Final Written Decision (Paper 59, “FWD”) because the Board erred in finding claims 7 and 17 (and dependent claims 8 and 18) unpatentable. First, the Board’s finding that Thomason “suggests” frame-by-frame viewing window size determination is an obviousness conclusion that lacks the required motivation analysis and credits Petitioner’s conclusory testimony over PO’s technically grounded rebuttal. Second, the Board’s “viewing window” construction conflicts with the claim language and Petitioner’s own expert’s admissions. Third, the Board found PO established commercial success and nexus but dismissed this evidence through circular reasoning—discounting the indicia because the feature was “largely within the prior art.”

II. LEGAL STANDARD

Director Review is warranted when the decision includes: “(a) abuse of discretion, (b) important issues of law or policy, (c) erroneous findings of material fact, or (d) erroneous conclusions of law.” USPTO, Director Review process, §5.A.¹

III. ARGUMENT

A. The Board Misapprehended Thomason’s Disclosure Regarding Determination of a Viewing Window (Claims 7-8 and 17-18)

Independent claims 1 and 11 require that the claimed system “determine a viewing window for the visual content as a function of progress through the progress

¹ <https://www.uspto.gov/patents/ptab/decisions/director-review-process>.

length based on the rotational positions of the image capture device as the function of progress through the capture duration.” Ex. 1001, 28:44-48. Dependent claims 7 and 17 narrow Claims 1 and 11 by reciting: “wherein the determination of the viewing window further includes determination of a size of the viewing window” Ex. 1001, 29:19–24. It is undisputed that the language “determin[ing] a viewing window for the visual content as a function of progress through the progress length” requires “determining a viewing window for ***different times*** of the video.” FWD at 13-14; *see also id.* at 17 (“Thus, the language of claim 1 (and similar language of claim 11) is consistent with Petitioner’s position that this language means determining a viewing window for different frames of the video where different frames correspond to recordings at different points in time.”). For example, the claim can be satisfied by a system that dynamically determines a viewing window on a “frame-by-frame” basis, based on rotational position data captured during the corresponding moments of the capture duration—it cannot be satisfied by a system that does an initial, one-time orientation measurement and applies that measurement as a correction across all subsequent frames. *See* FWD at 36-37.

Thomason discloses only single-image orientation measurement and correction. Figures 3a-3e show an embodiment where a single image is rotated and cropped to “eliminate blank space.” Ex. 1004, ¶ 36. The Board found that Figure 3d’s cropping window constitutes a “viewing window” but implicitly conceded that

Thomason does not disclose adjusting viewing window size frame-by-frame. FWD at 37-38. Specifically, rather than finding an express or inherent disclosure the Board concluded only that Thomason “reasonably suggests” this limitation:

A preponderance of the evidence also supports that Thomason ***suggests this adjustment on a frame-by-frame basis***. Thomason teaches a camera for capturing image data that “may record either still images or moving images, in the latter case by capturing a sequence of items of image data 8 representing sequential frames of the moving image.” Ex. 1004 ¶ 27. Thomason then teaches that a frame may be cropped based upon rotation. Id. ¶ 36 (“Frame 40 represents the recorded image and frame 42 represents the image frame of the displayed image.”). By teaching that moving images have multiple frames and adjustment takes place at the level of a “frame,” Thomason ***reasonably suggests adjusting size on a frame-by-frame basis***.

FWD at 37 (emphasis added). A finding that prior art “suggests” a limitation is a finding of *obviousness*. *AstraZeneca LP v. Apotex, Inc.*, 633 F.3d 1042, 1055 (Fed. Cir. 2010) (“In the context of anticipation, the question is not whether a prior art reference ‘suggests’ the claimed subject”); *Eli Lilly & Co. v. Los Angeles Biomedical Research Institute*, 849 F.3d 1073, 1074-75 (Fed. Cir. 2017).

Because the Board relied on obviousness, it was required to articulate *why* a POSITA would have modified Thomason to arrive at the missing feature. *DSS Tech. Management, Inc. v. Apple, Inc.*, 885 F.2d 1367 (Fed. Cir. 2018). The Board provided no such reasoning and its analysis suffers from various legal errors.

1. The Board’s “Suggestion” Finding Required, But Lacked, A Motivation Analysis

The Board’s analysis rested on two distinct observations: (1) Thomason’s Figures 3a-3e disclose cropping a single image ‘based upon rotation’ to “eliminate blank space,” and (2) Thomason discloses that a camera may capture “moving images” with “multiple frames.” FWD at 37 (citing Ex. 1004, ¶¶27, 36). From these observations, the Board improperly leaped to conclude that Thomason “suggests” frame-by-frame viewing window size determination.

The mere fact that Thomason discloses cropping a single image and recording multiple frames does not mean Thomason *suggests* doing the former for each instance of the latter. Performing a one-time measurement that is used as a correction factor across all subsequent frames is consistent with capturing moving images with multiple frames. The Board failed to explain what problem in Thomason would have motivated a POSITA to implement the more complex approach of performing the determination of the viewing window for *each* frame—including adjusting the viewing window size for each frame, as required by dependent claims 7 and 17—or *why* a POSITA reading about cropping a single image would apply that technique repeatedly across multiple frames to adjust the viewing window size frame-by-frame—rather than simply setting a fixed crop for an entire video. FWD at 37.

The Board’s conclusion also ignores Thomason’s disclosures. The only embodiment in Thomason that addresses multiple frames teaches using a *fixed-size*

viewing window. Paper 25 (“POR”) at 10-11, 29-30 (citing Ex. 1004, ¶39, Fig. 5); Ex. 2021, ¶47. Specifically, Thomason expressly avoids dynamic sizing by teaching a “circular sensor” where “[r]otation to any angle is possible without size reduction.” *Id.* The Board’s decision to ignore this teaching-away disclosure is grounds for reversal. *See Chemours Company FC, LLC v. Daikin Industries, Ltd.*, 4 F.4th 1370, 1376 (Fed. Cir. 2021) (reversing obviousness finding where the Board failed to provide “persuasive” motivations to combine and “appears to have ignored the express disclosure in Kaulbach that teaches away”).

2. The Board Erred By Ignoring Unrebutted Evidence Of Unpredictable Results

GoPro presented unrebutted evidence that determining viewing window size frame-by-frame produces unpredictable results—specifically, rapid field-of-view changes that users experience as a “pumping” effect (rapid zooming in and out). POR at 5-6; Paper 39 (“Sur-Reply”) at 7-8; Ex. 1001, 18:34-37. The ’832 patent addresses this problem by “smoothing” the viewing windows. Because the prior art does not contemplate frame-by-frame size changes, it provides no solution.

The Board erred by ignoring this evidence. FWD at 37-38. The Board noted that the claims do not require “smoothing,” FWD at 40, but this observation misses the point: the relevant question is whether a POSITA would have been motivated to make the proposed modification given that it would yield unpredictable, undesirable results for which the prior art discloses no solution. The Federal Circuit has vacated

Board decisions that “gloss over” evidence of unpredictability. *Honeywell Int’l Inc. v. Mexichem Amanco Holding S.A.*, 865 F.3d 1348, 1355 (Fed. Cir. 2017). Absent a reference disclosing a solution to the pumping problem, a POSITA would have avoided frame-by-frame size adjustment in favor of a fixed-size viewing window.

3. The Board Erred By Credited Petitioner’s Conclusory Expert Testimony, While Ignoring Technically Grounded Testimony From PO’s Expert

The Board’s finding that Thomason “suggests” frame-by-frame adjustment rested substantially on Dr. Katsaggelos’s testimony. FWD at 37 (citing Ex. 1002, ¶¶ 122-128). But Dr. Katsaggelos’s analysis of the additional limitation in claim 7 and 17 consists of little more than pointing to Thomason’s Figure 3 and asserting that “a POSITA would have understood that, based on the degree of rotation, more or less of the image would need to be cropped to obtain the viewing window.” Ex. 1002 ¶ 119. This observation—that viewing window size could vary based on rotation degree—does not establish that Thomason teaches or suggests determining size on a *frame-by-frame* basis as the claims require. Dr. Katsaggelos never explains why a POSITA would understand Thomason’s static, single-image correction example (Figure 3) to suggest dynamic per-frame size determination. Nor does he address why a POSITA choosing to implement frame-by-frame horizon leveling would not simply apply a fixed-size viewing window across the entire video, as taught in Thomason’s Figure 5 embodiment (see Section III.A.1), or why they would

dynamically adjust viewing window size without a solution in the prior art to the “pumping” problem (see Section III.A.2). Dr. Katsaggelos’s *ipse dixit* that a POSITA “would have understood” Thomason to suggest frame-by-frame adjustment is insufficient. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (precedential) (denying institution where petitioner relied on expert testimony that was “conclusory and unsupported”).

PO’s expert, Dr. Foroosh, provided the technical reasoning that Dr. Katsaggelos’s testimony lacks. Ex. 2021 ¶ 89. Thomason expressly states that in the embodiment of Figure 3 the “rotation sensor is an accurate accelerometer.” Ex. 1004 ¶ 29; POR (Response) at 31; Sur-Reply at 4. Dr. Foroosh explained that a single accelerometer can measure rotation in only one dimension, whereas a camera capturing video with multiple frames may rotate in three dimensions across the capture duration—making Thomason’s Figure 3 embodiment unsuitable for frame-by-frame viewing window size adjustment. *Id.*

Unlike Dr. Katsaggelos’s bare assertion, Dr. Foroosh’s testimony identifies a specific technical constraint in Thomason’s disclosure and provides a reasoned explanation for why that constraint does not suggest the claimed per-frame functionality. Yet the Board brushed this testimony aside as “conclusory” and concluded, without any record citation, that Thomason’s single-accelerometer system “would not prevent [Thomason] from correction for rotation, on a frame-by-

frame basis, in one dimension.” FWD at 38. The Board cited no evidence that a POSITA could perform frame-by-frame size adjustment based on rotation information capturing only one dimension of movement and Dr. Katsaggelos himself admitted he “did not consider” whether one can “do horizon-leveling frame-by-frame” with “an accelerometer.” Ex. 2022, 10:19–13:20. The Board thus erred by dismissing Dr. Foroosh’s technically grounded analysis in favor of its own unsupported technical analysis. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (“we find no support for the PTO’s position that the Board is free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner during an IPR.”).

4. The Board's Pacurariu Finding Does Not Cure the Deficiency

The Board alternatively found that “the Thomason-Pacurariu combination would work on a frame-by-frame basis.” FWD at 38. But this finding conflates distinct claim requirements: determining *placement* of a viewing window frame-by-frame (claims 1 and 11) versus determining *size* of a viewing window frame-by-frame (claims 7 and 17). A system can rotate a fixed-size viewing window frame-by-frame without ever changing the *size* of that window based on rotation.

Neither the Petition nor the Reply argued that Pacurariu determines a size of the viewing window frame-by-frame. Sur-Reply at 6-7. This is because Pacurariu discloses the opposite: selecting a fixed window size that it is small enough to

compensate for “any rotation” that may occur across the video without changing size. *Id.* at 6; EX1005, ¶¶44, 42; EX2021, ¶90. This is also consistent with Thomason’s teaching regarding the use of a “circular sensor” to allow a fixed size viewing window. See Section III.A.1. Thus, to the extent a POSITA were to combine Thomason-Pacurariu, the system would select a fixed viewing window that is small enough to allow for “any rotation” without needing to re-size the window. Indeed, the Board’s reasoning is devoid of any reason to do otherwise.

B. The Board’s Voss Analysis Rests on an Erroneous Claim Construction (Claims 7-8 and 17-18)

The Board’s analysis of independent claims 1 and 11 (and, by extension, dependent claims 7 and 17) is predicated on its finding that Voss’s “inset rectangle 225” constitutes the claimed “viewing window.” FWD at 52-54. In reaching this conclusion, the Board applied an erroneous interpretation of “viewing window,” concluding that the viewing window merely defines “the entire area of content . . . that the final horizon-leveled visual content is drawn from (after cropping).” FWD at 53. This reading is inconsistent with the plain claim language.

1. The Viewing Window of Claim 1 Must Define The Extents of Horizon Leveled Visual Content.

Claim 1 requires a “viewing window *defining* extents of visual content to be included within horizon-leveled visual content” Whatever original content is included within the viewing window must be horizon-leveled. To see why, the

“viewing window” term must be considered within the entire context of Claim 1.

Claim 1 recites a system for horizon-leveling videos that obtains a video having “visual content viewable as a function of progress through the progress length.” The system is “configured by machine-readable instructions” to determine a viewing window that “*defin[es] extents* of the visual content to be included within horizon-leveled visual content” and then “generate[s] the horizon-leveled visual content based on the viewing window” by “including *a punchout of the extents* of the visual content defined by the viewing window.” It is the “inclusion of the extents of the visual content defined by the viewing window within the horizon-leveled visual content” that “effectuates horizon leveling.” Ex. 1001, 28:62-65.

Thus, the claim requires that: (1) the viewing window defines the boundaries of some area of original visual content; and (2) this entire area is “punched out” to create the horizon-leveled visual content. The extents of the original visual content defined by the viewing window—not some subset—must be “includ[ed] . . . within the horizon-leveled visual content.”

A system that generates horizon-leveled visual content based on only a subset of the visual content in the viewing window does not satisfy the claim language. Petitioner’s expert, Dr. Katsaggelos, *admitted* that he agreed with this reading of the claim. Specifically, when asked whether a system that “cropped visual content and did not include everything that was in the viewing window in the horizon-leveled

visual content” would meet the claim, Dr. Katsaggelos testified that such a system configuration would not meet the claim because all of the content in the viewing window (which Dr. Katsaggelos referred to as “A”) must be included in the outputted horizon-leveled visual content (which Dr. Katsaggelos referred to as “B”):

Q. It’s a pretty simple question. If you had a system that cropped visual content and did not include everything that was in the viewing window in the horizon-leveled visual content, then that system configuration would not meet the claim, right?

A. Yeah, I interpret the including, as I mentioned before, that again if A is included in B then **A is found in B** but B can be larger.

Ex. 2041, 15:23-16:7, 15:2-8; *see also id.* 13:14-14:15 (agreeing that “whatever appears within the viewing window... has to be horizon-leveled”). Thus, the horizon-leveled visual content must include everything within the viewing window.

2. The Board’s Interpretation Improperly Allows Additional Cropping Of The Viewing Window

The Board recognized PO’s argument regarding the viewing window. FWD at 52-53. The Board erred, however, in finding that this argument “does not persuasively undermine Petitioner’s position.” *Id.* Specifically, the Board found that Voss’s “inset rectangle’s visual content defines the entire area of content (the extent) that the final horizon-leveled visual content is ***drawn from (after cropping)***.” *Id.* That is not what the claim requires, and is inconsistent with Petitioner’s admissions (Section III.B.1). There is no basis in the claim for an interpretation that

covers a system that merely “draws” some subset of the visual content within the viewing window for inclusion in the horizon-leveled visual content.

3. Voss Does Not Meet The Claims Properly Interpreted

When the claim is properly interpreted, Voss fails to disclose a “viewing window” and Ground 3 thus cannot render claims 7 and 17 obvious. Voss generates a separate “output rectangle” that may differ from the “inset rectangle” (alleged “viewing window”). Paper 25 at 57-58. Specifically, Voss’s output rectangle is configured to “oscillate between” two different transformation processes based on the orientation of the device at a given moment: (1) “fill[ing],” which involves “cropping data” from within the inset rectangle to create the output box; and (2) “fit[ting],” which involves “blacking out any unused area with ‘letter boxing’ or ‘pillar boxing.’” Ex. 1007, 10:17-11:2. When Voss crops content from the inset rectangle (filling), the horizon-leveled output does not include “the extents” defined by the inset rectangle—it includes only a subset of those extents—as discussed above. Indeed, Petitioner implicitly acknowledged this deficiency by relying only on Voss’s disclosure of “fitting.” See Sur-Reply at 19.

The Board acknowledged that Voss’s video generation involves using filling on frames: “For a selected output dimension of 16:9 and a combination of portrait and landscape content, the output would *oscillate* between being pillar-boxed portrait content and cropped landscape content.” FWD at 23 (emphasis added). That

Voss may *sometimes* produce output frames through fitting does not mean it is *configured* to operate as claimed. *In re Facebook, Inc.*, 2018 WL 3860547, at *2 (Fed. Cir. 2018) (prior art did not disclose required configuration where system merely “happened to result in” the claimed output); *Rex Med., L.P. v. Intuitive Surgical, Inc.*, 2020 WL 2128795, at *5 (D. Del. 2020) (“Configure . . . means set up for operation especially in a particular way.”).

Voss is not “configured by machine-readable instructions” to determine a viewing that defines “extents of the visual content to be included within horizon-leveled visual content” on a frame-by-frame basis. Ex. 1001, 28:27-51.

C. The Board Failed To Properly Weigh The Objective Indicia

The Board found that PO established that GoPro’s Horizon Leveling feature practices the challenged claims of the ’832 patent (FWD at 62-63) and that GoPro established commercial success and a nexus between that success and the patented Horizon Leveling feature (FWD at 63-64). Yet the Board discounted the evidence of commercial success, reasoning that “while there is some credible evidence of commercial success, it is one feature among many in the HERO feature set, and a feature that is largely within the prior art.” FWD at 65. This reasoning is erroneous.

First, the Board’s reasoning is impermissibly circular. The Board used its obviousness conclusion (that the claimed invention is “largely within the prior art”) as a reason to discount the objective indicia of nonobviousness. But objective indicia

exist precisely to serve as a check on the obviousness analysis—they cannot be dismissed on the ground that the invention was already found to be in the prior art.

The Federal Circuit has emphasized that objective indicia “may often be the most probative and cogent evidence in the record” and “may often establish that an invention appearing to have been obvious in light of the prior art was not.” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012). By stating that GoPro’s Horizon Leveling is “largely within the prior art,” the Board nullifies the objective indicia inquiry.

Second, the Board failed to articulate what weight it assigned to the commercial success evidence or explain how that evidence factored into its ultimate obviousness determination. The Federal Circuit requires the Board to articulate “a reasoned, collective weighing of its evidence of secondary considerations” and has reversed where boards relied on “overly vague and ambiguous assignments of weight to different considerations.” *Volvo Penta of the Americas v. Brunswick Corp.*, 81 F.4th 1202, 1213-16 (Fed. Cir. 2023). Here, the Board acknowledged “some credible evidence of commercial success” but then dismissed it without explaining what weight it assigned this credible evidence or how it weighed this factor into the final obviousness balance. The Board’s failure to provide this reasoned explanation is legal error. *See Volvo Penta*, 81 F.4th at 1215 (vacating where Board’s “assignment of weight” to the objective indicia was “overly vague and ambiguous.”)

Third, the Board’s characterization of the evidence as merely “some credible evidence” understates the strength of PO’s commercial success showing. The unrebutted evidence established that GoPro’s HERO line of cameras has been the top-selling action camera in the United States for nine consecutive quarters, capturing between 80 to 85 percent of the consumer market. Ex. 2036; FWD at 64; Paper 25 (Response) at 75. In GoPro’s 2022 hardware segmentation study evaluating which features mattered most to customers across 33 key features, “Advanced video stabilization” (encompassing HyperSmooth and Horizon Leveling) was ranked as the *single most important feature* among GoPro’s core customer segment. Ex. 2040, 10; Paper 25 (Response) at 74. In a separate 2022 survey of actual HERO11 Black purchasers identifying which features drove their purchase decisions, *Horizon Leveling was ranked second* among all features—behind only HyperSmooth. Ex. 2024, ¶20; Paper 25 (Response) at 75.

This is not “some” evidence—it is compelling, unrebutted evidence of commercial success directly tied to the Horizon Leveling feature. The Board’s dismissive treatment of this evidence, particularly without any explanation of why such strong evidence was insufficient to overcome the prior art, constitutes error.

IV. RELIEF REQUESTED

For the above reasons, PO respectfully request that the Director reverse the finding that Petitioner has shown claims 7-8 and 17-18 unpatentable.

Respectfully submitted,

Dated: January 2, 2026

By: /s/ James Glass

James M. Glass (Reg. No. 46,729)

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Request for Director Review was provided via email on January 2, 2026, to the Petitioner by serving the correspondence address of record as follows:

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