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. IPR2024-01186
U.S. Patent No. 10,574,894

PATENT OWNER'S PRELIMINARY RESPONSE

PUBLIC VERSION

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EXHIBIT LIST

No.	Exhibit
2001	Declaration of Hassan Foroosh, Ph.D.
2002	*Curriculum vitae* of Hassan Foroosh, Ph.D.
2003	"GoPro Celebrates Surpassing 50 Million Cameras Sold," produced as GOPRO_00063291 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2004	[redacted] produced as GOPRO_00009580 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2005	"NHL, NHLPA Partner with GoPro To Deliver Hockey Fans Unique Perspectives Of The Game," produced as GOPRO_00063270 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2006	Complaint, *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith*, Inv. No. 337-TA-1400
2007	E-mail from Alex S. Yap on October 9, 2024
2008	"GoPro Named Exclusive Action Camera of Red Bull Rampage, the World's Biggest Freeride Mountain Bike Event," produced as GOPRO_00063323 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2009	"GoPro and Adobe Collaborate to Bring Unique Content to Adobe Stock Users," produced as GOPRO_00063341 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400

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2010	"73rd Annual Technology & Engineering Emmys," produced as GOPRO_00000009 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2011	"Believe the Hype: GoPro Showcases Award-Winning HERO7 Cameras at CES 2019," produced as GOPRO_00063251 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2012	"GoPro Wins Second Emmy® Award for Groundbreaking Digital Imaging Technology," produced as GOPRO_00063339 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2013	"J.P. Morgan – North America Equity Research (21 September 2018)," produced as GOPRO_00359592 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2014	"GoPro Hero 9 Black vs Hero 8 Black: 9 key differences you need to know," produced as GOPRO_00010039 in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2015	[redacted] in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400
2016	[redacted] in *In the Matter of Certain Cameras, Camera Systems, and Accessories Used Therewith,* Inv. No. 337-TA-1400

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I. INTRODUCTION

Founded in 2002 in San Mateo, California, Patent Owner GoPro, Inc. ("Patent Owner" or "GoPro") is a pioneer in developing cameras and digital imaging techniques, particularly for mountable and wearable use cases. As a company built on innovation, GoPro has received numerous patents protecting its technological improvements, including on video stabilization in diverse conditions and circumstances. GoPro has become a leader in the industry, receiving scores of industry praise from professionals and consumers alike. Petitioner is a recent entrant into this market that has found significant success by copying GoPro's designs and innovations, including the patent at issue in this proceeding.

GoPro's Emmy award-winning HyperSmooth video stabilization technology, protected by U.S. Patent No. 10,574,894 (the "'894 patent"), achieves what no prior stabilization technology had, in part, by minimizing a combination of rotational velocity and rotational acceleration of the image capture device's housing and balancing or weighing the derivatives (first, second, and higher order) differently or equally to determine an optimal smooth trajectory. This approach provides flexibility in emphasizing velocity

or acceleration of the yaw, pitch and roll of the camera depending on the circumstances, allowing for fine-tuned stabilization in diverse settings.

The prior art presented by Petitioner, including Zhou and Kwatra, fell short because they failed to appreciate these key insights. Zhou discloses a system that applies trajectory smoothing in a narrow application setting (handheld devices recording casual video) based on estimating the amount of motion blur in a current frame, using motion data from adjacent frames, to adjust or modulate the strength of a video stabilization metric value, subject to the constraint that the stabilized frame must fit within a prespecified "overscan." It does not teach the specific concepts of minimizing both rotational velocity and rotational acceleration, nor does it describe the differential weighting of these components and their tradeoffs. Thus, Zhou's system focuses on motion smoothing based on estimated motion blur, rather than minimizing rotational motion characteristics like velocity and acceleration simultaneously.

And while Kwatra discusses generating smooth camera paths by minimizing derivatives of motion, it is teaching the solution to a totally different video stabilization problem from the '894 patent. Kwatra teaches that in its setting the velocity and acceleration are "substantially constant" along

both the "original path" and the "smoothed path" of the camera, except for some points in time that the camera makes sudden motions, e.g. transitions from static to panning. In other words, Kwatra limits to a **narrow** setting of piecewise or "segment"-wise "substantially constant velocity and acceleration." Kwatra does not disclose, much less enable, the simultaneous minimization of both rotational components, especially with the flexibility of applying differential weights to yaw, pitch and roll for stabilization throughout the path, as claimed in the '894 Patent.

Moreover, while Zhou and Kwatra disclose some aspects of stabilization, they consider very different video capture settings and stabilization problems and take different approaches that are not readily combinable. Zhou's reliance on modulating the smoothing strength based on estimated motion blur in current frame and the preset overscan size contrasts with Kwatra's focus on minimizing motion derivatives with the constraint of segment-wise "substantially constant velocity and acceleration," leaving no teaching or suggestion within these references to motivate a person of ordinary skill to combine them in a way that would achieve the unique minimization of both rotational velocity and rotational acceleration, as required by the '894 Patent.

Additionally, as detailed further below, secondary considerations of non-obviousness—such as GoPro's commercial success, industry recognition, the long-felt need for this technology, and copying by competitors—provide further compelling evidence that the claimed inventions are not obvious. These objective indicia reinforce the non-obvious nature of the inventions and further underscore why the '894 Patent should be upheld.

For all these reasons, as well as those further discussed below, Petitioner fails to meet its burden, and the Board should uphold the challenged claims.

II. OVERVIEW OF THE '894 PATENT

The '894 Patent, titled "Systems and Methods for Stabilizing Videos," discloses an advanced system designed to stabilize video content by minimizing the effects of jerky or shaky camera movements. Ex. 2001, ¶¶35-38. The system achieves this by generating a capture trajectory that differs from the observed trajectory of the camera, which represents the actual path followed during video capture. It utilizes position sensors, such as gyroscopes and accelerometers, Ex. 1001, 2:5-14, to detect camera movements and create a smoothed path based on the camera's yaw, pitch, and roll angles. *Id.,* 10:61-

11:22; Ex. 2001, ¶35. By minimizing both rotational velocity and rotational acceleration, the system ensures smoother changes in the camera's position and orientation, resulting in a more stable video output. *Id.*

The '894 Patent further explains how the system generates stabilized video content by selecting portions of the captured images, referred to as punch-outs, based on the smoothed trajectory. Ex. 1001, 8:1-37; Ex. 2001, ¶36. These punch-outs are used to produce a final video that avoids the shakiness associated with the observed camera movements. Ex. 1001, 10:11-25; Ex. 2001, ¶36. The stabilization method operates to "minimize[] a combination of a time derivative, a second time derivative, and/or other time derivative(s) of the yaw angle position, pitch angle position, and/or roll angle position while respecting [a] set of constraints." Ex. 1001, 11:2-15; Ex. 2001, ¶36.

The '894 Patent represents a significant advance over the prior art by minimizing rotational velocity, rotational acceleration, and/or other time derivative(s), and introducing the capability to balance and weigh these components differently, depending on the stabilization requirements. Ex. 1001, 11:15-22; Ex. 2001, ¶37. These advancements offer fine-tuned control over the stabilization process to take into account a wide variety of motion

characteristics (e.g., large or small, Ex. 1001, 11:53-61, 12:23-33), something the prior art failed to provide. Ex. 2001, ¶37. The prior art did not fully appreciate the importance of addressing a variety of rotational motion characteristics, nor did it enable simultaneous control of their tradeoff to optimize stabilization by applying different weights to rotational velocity and acceleration, and other derivatives. *Id.*

This breakthrough—allowing the weighing and balancing of rotational dynamics, coupled with the overall system's innovative approach to video stabilization—was pivotal to GoPro's Emmy award-winning success. *Id.,* ¶38. As discussed in greater detail below, the commercial success of GoPro's cameras, the industry praise for its innovative stabilization, and the long-felt need for this advanced technique further validate the non-obviousness and impact of the patented technology. *Id.*

III. OVERVIEW OF CERTAIN CITED ART

The petition challenges the '894 Patent's claims 1 to 20 on two grounds. *Id.*, ¶39. Ground 1 asserts that the combination of Zhou and Kwatra renders the claims obvious. Ground 2 asserts that the combination of Zhou, Kwatra, and Shi also renders the claims obvious. Below are short summaries of these references. *Id.*

B. Ground 1 Cited Art

1. Zhou (Ex. 1004)

The Examiner issued the '894 Patent over Zhou. See Appl. No.: 16/548,453, List of references cited by examiner (Sept. 13, 2019). Ex. 2001, ¶40.

Zhou discloses a system aimed at smoothing camera motion during video capture by adjusting a "stabilization metric" in response to motion data derived from gyroscopes or accelerometers. Ex. 1004, Abstract, 3:47-4:19; Ex. 2001, ¶¶41-42. This system focuses on motion smoothing of a handheld camera in low-light conditions based on estimating the motion blur in each frame but lacks specific treatment for rotational dynamics such as velocity and acceleration along yaw, pitch, and roll, which are critical to the '894 Patent's approach to stabilization. Ex. 2001, ¶41.

In contrast, the '894 Patent introduces a system that minimizes a tradeoff of both rotational velocity and rotational acceleration, allowing these factors to be weighed equally or differently for greater control over stabilization. *Id.,* ¶42. This flexibility in handling rotational dynamics is not disclosed by Zhou. *Id.*

2. Kwatra (Ex. 1005)

Kwatra discloses techniques for generating smooth camera paths by minimizing derivatives of the camera's trajectory, including velocity and acceleration. Ex. 1005, 13:23-14:52; Ex. 2001, ¶¶43-46. However, Kwatra teaches that velocity and acceleration are "substantially constant" along both the "original path" and the "smoothed path" of the camera, except for some points in time that the camera makes transitions, e.g. from static to panning. (Ex. 1005, 1:48-57, 2:6-14, 6:13-14, 6:20-28, 6:40-42, 13:41-42, 13:49-54); Ex. 2001, ¶43. In other words, Kwatra limits to a **narrow** setting of piecewise or "segment"-wise "substantially constant velocity and acceleration." Ex. 2001, ¶43. Moreover, Kwatra does not provide a specific method for balancing and weighing ***rotational*** velocity and rotational acceleration, particularly across the yaw, pitch, and roll angles of the camera, as required by the '894 Patent. *Id.*

The '894 Patent introduces a more advanced approach by specifically applying the derivatives to the camera's yaw, pitch, and roll angle positions, allowing for precise control over rotational velocity and rotational acceleration along these rotational axes. See Ex. 1001, Equation 54, 11:2-15; Ex. 2001, ¶44. This allows for targeted stabilization of the camera's rotational

dynamics along each axis, a feature that is absent in Kwatra's broader discussion of camera movement. Ex. 2001, ¶44.

Although Kwatra mentions that a segment of path may have more complex camera motions, such as parabolic movement, Ex. 1005, 14:23-37, such movement is still substantially smooth (i.e. with substantially constant velocity or acceleration). Ex. 2001, ¶45. Kwatra does not disclose the detailed treatment of rotational dynamics, such as minimizing rotational velocity and acceleration along specific rotational axes (yaw, pitch, and roll). Ex. 2001, ¶45. The ability to adjust weights on these first, second, and higher order derivatives for rotational stabilization, as disclosed in the '894 Patent, allows for a level of control and fine-tuning that is simply not present in Kwatra's approach to motion stabilization. *Id.*

The '894 Patent's emphasis on minimizing rotational velocity and acceleration across yaw, pitch, and roll angles, and the ability to weigh these components differently or equally, provides a more refined and flexible method for stabilization. *Id.,* ¶46. This distinction makes the '894 Patent more versatile in terms of being able to handle a wide variety of rotational dynamics, and a significant advancement over Kwatra, and hence establishes the non-obviousness of the claimed invention. *Id.*

C. Ground 2 Cited Art

1. Shi (Ex. 1006)

Shi focuses on trajectory estimation and correction to stabilize videos through a series of transformations that adjust the camera's position and rotation based on motion data. Ex. 2001, ¶47-48. The system applies a first transformation using optical image stabilization (OIS) data and then calculates a second transformation based on additional positional data collected after the capture of the frame. Ex. 1006, 3:52-4:11; Ex. 2001, ¶47. This second transformation generates a stabilized version of the frame by correcting for both translational and rotational movements, but Shi does not specifically address the minimization or balancing of rotational velocity and acceleration or higher order derivatives. Ex. 2001, ¶47. Shi's approach relies on broader trajectory estimation and correction models that do not focus on the detailed handling of rotational dynamics, such as applying different weights to rotational velocity and acceleration or other derivatives, as claimed in the '894 Patent. *Id.*

The '894 Patent advances beyond Shi by focusing on rotational stabilization and providing a precise method for minimizing rotational velocity and acceleration, either independently or together. *Id.,* ¶48. This

results in a more tailored stabilization approach, crucial for more versatile and high-precision video capture, which is absent from Shi. *Id.*

IV. LEVEL OF ORDINARY SKILL IN THE ART

Petitioners propose that the level of a POSITA at the time of the '894 patent "would have a bachelor's degree in engineering or computer science, or equivalent field, and two years of experience working on image or video processing, or digital cameras" or "four years of experience working on image or video processing, or digital cameras." Pet. 6.

For purposes of this preliminary response, Patent Owner applies Petitioner's proposed level of skill. Ex. 2001, ¶¶17-21. Patent Owner's expert, Dr. Hassan Foroosh, was a POSITA under Petitioner's definition at the time of the '894 patent. *Id.*, ¶21.

V. CLAIM CONSTRUCTION

In an *inter partes* review, claim terms receive their plain and ordinary meaning in light of the specification of the patent in which they appear, following the same standard used in district court. 37 C.F.R. § 42.100(b); *see Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). Petitioner states that no constructions are necessary. See Pet. at 6. Patent Owner agrees that no

claim terms presently require construction to resolve any current dispute between the parties. Ex. 2001, ¶34.

VI. GROUND 1: PETITIONER FAILS TO ESTABLISH THAT ZHOU AND KWATRA RENDER CLAIMS 1-20 OBVIOUS

A. Claims 1 and 11: Zhou in View of Kwatra Does Not Render Obvious the Limitation "Capture Trajectory Is Determined To Include A Path That Minimizes A Combination of Rotational Velocity And Rotational Acceleration Of The Housing, The Combination Of The Rotational Velocity And The Rotational Acceleration Weighing Them Equally Or Differently"

Claims 1 and 11 require that the "capture trajectory is determined to include a path that minimizes a combination of rotational velocity and rotational acceleration of the housing, the combination of the rotational velocity and the rotational acceleration weighing them equally or differently." Ex. 2001, ¶¶49-55.

Zhou discloses a system that smooths camera motion during video capture by adjusting a "video stabilization strength metric" to account for motion data. Ex. 1004, 3:47-4:3; Ex. 2001, ¶50. While Zhou relies on motion data from gyroscopes or accelerometers, it focuses on motion smoothing based on estimated motion blur of the current frame from adjacent frames in low-light conditions, and does not address rotational dynamics, such as yaw, pitch, and roll. Ex. 1004, 3:47-4:19; Ex. 2001, ¶50. The rotational aspects of

camera movement are critical to the '894 Patent but are not contemplated by Zhou. Ex. 2001, ¶50.

While Kwatra allows for applying different weights to velocity and acceleration (Ex. 1005, 14:14-22), it teaches that velocity and acceleration are "substantially constant" along both the "original path" and the "smoothed path" of the camera, except for some points in time that the camera makes transitions, e.g. from static to panning. Ex. 1005, 1:48-57, 2:6-14, 6:13-14, 6:20-28, 6:40-42, 13:41-42, 13:49-54; Ex. 2001, ¶51. Kwatra does not provide a method for balancing and weighing ***rotational*** velocity and ***rotational*** acceleration, particularly across the yaw, pitch, and roll angles of the camera, as required by the '894 Patent. Ex. 2001, ¶51.

The '894 Patent introduces a more advanced approach by specifically applying combined optimization to first, second, and higher order derivatives of the camera's yaw, pitch, and roll angle positions, allowing for precise control over rotational velocity and rotational acceleration along these rotational axes. *See, e.g.*, Ex. 1001, Equation 54, 11:2-15; Ex. 2001, ¶52. This allows for targeted stabilization of the camera's rotational dynamics, a feature that is absent in Kwatra's broader discussion of camera movement. Ex. 2001, ¶52.

Although Kwatra mentions a more complex camera motion along a camera path segment, such as parabolic movement, Ex. 1005, 14:23-37, such movement is still substantially smooth (i.e., with substantially constant velocity or acceleration). Ex. 2001, ¶53. Kwatra does not disclose the detailed treatment of rotational dynamics, such as minimizing rotational velocity and acceleration along specific rotational axes (yaw, pitch, and roll). Ex. 2001, ¶53. The ability to adjust weights on these derivatives for rotational stabilization, as disclosed in the '894 Patent, allows for a level of control and fine-tuning that is not present in Kwatra's general approach to motion stabilization. *Id.*

The '894 Patent advances beyond Kwatra by emphasizing minimizing rotational velocity and acceleration across yaw, pitch, and roll angles, and by allowing these components to be weighed differently or equally. Ex. 2001, ¶54. This refined and flexible method for stabilization makes the '894 Patent more versatile in terms of being able to handle a wide variety of rotational dynamics, and a significant improvement over Kwatra, and hence establishes the non-obviousness of the claimed invention. *Id.*

The failure to identify references that disclose this key limitation of the independent claims of the '894 Patent is fatal to the Petition. *Id.,* ¶55; *see Univ.*

of Strathclyde v. Clear-Vu Lighting LLC, 17 F.4th 155, 160-62 (Fed. Cir. 2021) (reversing obviousness decision in IPR where substantial evidence did not support finding that prior art taught all of the claim limitations).

B. A POSITA Would Not Have Been Motivated to Combine Zhou and Kwatra

Petitioner fails to identify a motivation to combine Zhou and Kwatra to arrive at the claimed invention of the '894 Patent. As detailed in Ex. 2001, ¶¶ 56-58, the combination of these two references would not lead a person of ordinary skill in the art to the versatile and precise stabilization method disclosed in the '894 Patent.

Zhou's method of trajectory smoothing based on motion blur and adjacent frames is fundamentally different from the fine-tuned rotational stabilization required by the claims. Ex. 2001, ¶57. While Kwatra emphasizes the minimization of motion path derivatives, it is only teaching the limited case of segment-wise substantially constant velocity or acceleration, without recognizing the need for differential weighting of ***rotational*** velocity and ***rotational*** acceleration. *Id.*

Therefore, a POSITA would not have been motivated to combine the teachings of Zhou and Kwatra, as these references address fundamentally different stabilization approaches. *Id.,* ¶58. It is well-established that hindsight

bias should be avoided in obviousness determinations, as recognized in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). Petitioner's attempt to combine Zhou and Kwatra is an example of improper hindsight reasoning, where the Petitioner is guided by the teachings of the '894 Patent rather than the prior art. Ex. 2001, ¶58.

VII. GROUND 2 FAILS ON THE MERITS

Petitioner asserts that the combination of Zhou, Kwatra, and Shi renders claims 2, 3, 7, 12, 13, and 17 of the '894 Patent obvious. *Id.,* ¶59. However, this combination fails for the same reason as Ground 1, as Shi does not (and is not even alleged to) cure the deficiencies of Zhou and Kwatra with respect to the requirements of independent claims 1 and 11 that a "capture trajectory is determined to include a path that minimizes a combination of rotational velocity and rotational acceleration of the housing, the combination of the rotational velocity and the rotational acceleration weighing them equally or differently." *Id.*

VIII. PETITIONER FAILS TO PROVIDE A REASONABLE EXPECTATION OF SUCCESS OR ADEQUATE MOTIVATION TO COMBINE

Petitioner fails to provide an adequate analysis regarding a reasonable expectation of success or the motivation to combine Zhou and Kwatra. Ex.

2001, ¶¶60-63. These deficiencies are fatal to the Petition, as both elements are indispensable in establishing obviousness.

A reasonable expectation of success is a core requirement for a finding of obviousness, and it cannot be established through mere conclusory statements. As the Federal Circuit has explained, "[a] finding by the Board that a patent challenger has demonstrated a motivation to combine references does not necessarily imply that the challenger has also met its burden of showing a reasonable expectation of success." *Eli Lilly & Co. v. Teva Pharms. Int'l GmbH*, 8 F.4th 1331, 1344 (Fed. Cir. 2021). Moreover, the Federal Circuit has repeatedly emphasized that "[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn,* 441 F.3d 977, 988 (Fed. Cir. 2006).

In this case, Petitioner has failed to meet this burden across all grounds, particularly in its attempt to combine Zhou and Kwatra to address the limitation requiring minimization of both rotational velocity and rotational acceleration. Ex. 2001, ¶60. Petitioner's expert claims that combining these references would succeed because both Zhou and Kwatra focus on stabilizing

video against camera shake (Ex. 1002, ¶¶115-117); Ex. 2001, ¶61. However, this reasoning is superficial and conclusory and ignores the deeper differences in the approaches of Zhou and Kwatra. Ex. 2001, ¶61.

Zhou's video stabilization method focuses on a strength parameter based on estimated motion blur without addressing the specific rotational dynamics of velocity and acceleration, especially along the yaw, pitch, and roll axes as required by the '894 Patent. *Id.,* ¶62. On the other hand, while Kwatra discusses minimizing derivatives of camera motion, it teaches the limited case where velocity and acceleration are "substantially constant" along both the "original path" and the "smoothed path" of the camera, except for transition points, e.g. from static to panning. (Ex. 1005, 1:48-57, 2:6-14, 6:13-14, 6:20-28, 6:40-42, 13:41-42, 13:49-54); Ex. 2001, ¶62. Kwatra does not address the unique weighting of rotational velocity and acceleration, nor does it consider the specific rotational axes of the camera's housing. Ex. 2001, ¶62. The '894 Patent introduces a novel approach by weighing these derivatives equally or differently across the yaw, pitch, and roll axes, which neither Zhou nor Kwatra discloses. *Id.*

Furthermore, while Petitioner's expert argues that a POSITA would reasonably expect success in combining Zhou and Kwatra (Ex. 1002, ¶¶115-

117), this reasoning is conclusory. Ex. 2001, ¶63. There is no detailed explanation as to why a POSITA would expect that combining Zhou's trajectory smoothing based on estimated motion blur with Kwatra's segment-wise smoothing of motion path with substantially constant velocity or acceleration would result in the fine-tuned rotational stabilization required by the '894 Patent across the yaw, pitch, and roll axes. *Id.* Without specific analysis, Petitioner's case rests on conclusory statements, which is insufficient to establish a reasonable expectation of success. *Id.*

The lack of adequate explanation regarding why a POSITA would reasonably expect the proposed combination to achieve the claimed invention undermines Petitioner's obviousness theory. For these reasons, Petitioner has failed to meet the necessary burden, and the Petition should be denied.

IX. SECONDARY CONSIDERATIONS CONFIRM THE NON-OBVIOUSNESS OF THE '894 PATENT

Secondary considerations, or "objective indicia," of non-obviousness are critical in the overall inquiry under 35 U.S.C. § 103. As the Federal Circuit has noted, these indicia can "often establish that an invention appearing to have been obvious in light of the prior art was not." *See Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983); *Liqwd, Inc. v. L'Oreal USA, Inc.*, 941 F.3d 1133, 1136-37 (Fed. Cir. 2019). Objective indicia "'may

often be the most probative and cogent evidence' of nonobviousness." *Liqwd*, 941 F.3d at 1136. These considerations are crucial in preventing hindsight bias, which can distort the obviousness analysis. *See Bristol-Myers Squibb Co. v. Teva Pharms. USA, Inc.*, 752 F.3d 967, 977 (Fed. Cir. 2014). When a nexus exists between these secondary considerations and the claimed invention, this evidence can carry substantial weight. *See Rambus Inc. v. Rea*, 731 F.3d 1248, 1256 (Fed. Cir. 2013).

Moreover, as emphasized in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007), secondary considerations play a pivotal role in avoiding the pitfalls of hindsight bias, which can improperly influence the determination of obviousness. Objective indicia offer concrete evidence that helps ground the analysis in real-world achievements and market realities, rather than retrospective rationalization of prior art.

In the case of GoPro's '894 Patent, the following secondary considerations strongly support non-obviousness (Ex. 2001, ¶¶64-74):

A. <u>Commercial Success</u>

GoPro's HyperSmooth technology, which practices the claimed inventions of the '894 Patent (Ex. 2001, ¶¶64-65; Ex. 2006 (Complaint), ¶22; Ex. 2016 [redacted]), has driven significant commercial success. Ex.

2001, ¶66. GoPro has sold over 50 million action cameras since 2009, with its HERO series cameras, featuring HyperSmooth stabilization, at the forefront of this success. *See* Ex. 2003 ("GoPro Celebrates Surpassing 50 Million Cameras Sold"); Ex. 2001, ¶66. For example, the HERO7, which introduced HyperSmooth as a flagship feature, [redacted]

Ex. 2001, ¶66.

GoPro's dominant position in the U.S. action camera market, holding a larger share than all competitors combined, further illustrates the commercial strength of its patented technologies. Ex. 2001, ¶67. GoPro's partnerships with leading brands like Red Bull, NHL, and Adobe reflect the substantial demand for and market confidence in GoPro's products, driven in large part by its stabilization technologies. *See* Ex. 2005 (NHL Senior VP of Programming and Production said, "[O]nly GoPro has the technology to help us and our media partners showcase the beauty and intensity of hockey in new and deeper ways."); Ex. 2008 (GoPro "named the exclusive action camera of Red Bull" mountain bike competition; GoPro athletes will capture their runs

wearing HERO11 featuring "GoPro's Emmy Award-winning HyperSmooth video stabilization"); Ex. 2009 (Vice President of Adobe Stock said, "Adding GoPro's unique footage to Adobe Stock gives our community access to a library of immersive 'wow' moments that will take their audience to new places and deliver an additional level of depth and perspective to their creations"); Ex. 2001, ¶67.

This success is closely linked to specific features of GoPro's patented technologies, such as the minimization of rotational velocity and acceleration approach described in the '894 Patent. Ex. 2001, ¶68.

B. Industry Praise and Recognition

GoPro's HyperSmooth technology has garnered widespread industry recognition. Ex. 2001, ¶69. It earned a CES Innovation Award in 2019 and a Technology and Engineering Emmy in 2022, further confirming the value and non-obviousness of GoPro's patented stabilization methods. *See* Ex. 2010 ("73th Annual Technology & Engineering Emmys" . . . "In Camera Sensor and Software Stabilization – Awarded to GoPro and Socionext" . . . "The technology has created the ability for camera operators and producers to obtain stabilized action footage when a subject is rapidly moving easily and economically in unstable situation."); Ex. 2011 ("GoPro Showcases Award-

Winning HERO7 Cameras at CES 2019"); Ex. 2012 ("GoPro Wins Second Emmy® Award for Groundbreaking Digital Imaging Technology"; "This Emmy is in recognition of the technology powering GoPro's industry-leading HyperSmooth video stabilization"); Ex. 2001, ¶69.

Third-party reviews consistently highlight HyperSmooth as a groundbreaking feature that sets GoPro apart from competitors, with praise for its ability to deliver stable, smooth video footage in challenging conditions. Ex. 2013 (analysts at JP Morgan stating GoPro's "gimbal like hypersmooth stabilization (developed in-house software and hardware)" was "a significant upgrade" when introduced and was the "key selling point" in the HERO7 camera); Ex. 2014 at 5 ("GoPro's HyperSmooth image stabilization is the best we've seen on any action camera"); Ex. 2001, ¶70.

C. Long-Felt but Unmet Need

Before the introduction of HyperSmooth, users of action cameras faced persistent challenges in capturing stable footage during high-vibration activities like mountain biking, hiking, or surfing. Ex. 2001, ¶71. Mechanical gimbals, while used for stabilization, were bulky, fragile, and unsuitable for dynamic environments of such applications. *Id.* This long-standing issue, now addressed by the digital stabilization system claimed in the '894 Patent,

underscores the invention's non-obvious nature. *Id.* As the Federal Circuit has recognized, solving a long-felt but unmet need supports a finding of non-obviousness. *See Tec Air, Inc. v. Denso Mfg. Michigan Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999).

[redacted] Ex. 2001, ¶72.

The success of these advanced methods filled a long-felt gap in the market, further demonstrating the non-obviousness of the claimed inventions. Ex. 2001, ¶¶71-72.

D. Unexpected Results

GoPro's system consistently outperformed traditional stabilization techniques, which often failed to maintain stabilization under rapidly changing motion characteristics, showcasing the unexpected success of the HyperSmooth system over prior technologies. Ex. 2014 ("GoPro's HyperSmooth image stabilization is the best we've seen on any action camera"); Ex. 2015, [redacted]; Ex. 2001, ¶73.

These unexpected results further reinforce the non-obviousness of the '894 Patent. *Id.*

E. Copying by Competitors

Copying by competitors is a strong indicator of non-obviousness. *See Liqwd, Inc. v. L'Oreal USA, Inc.*, 941 F.3d 1133, 1137 (Fed. Cir. 2019). In this case, Insta360, a direct competitor, is accused of copying GoPro's HyperSmooth technology, further highlighting the innovative and valuable nature of the '894 Patent.[1] Ex. 2001, ¶74, Ex. 2006 (Complaint).

[1] Patent Owner understands that in the ITC litigation, Petitioner served an interrogatory response requesting Patent Owner's contentions regarding

secondary considerations. On October 3, 2024, Lead Counsel for Patent Owner emailed Petitioner, asking that Petitioner produce any documents relevant to secondary indicia under Petitioner's self-executing obligation to produce any "relevant information that is inconsistent with" its obviousness grounds, including evidence of secondary considerations. 37 C.F.R. § 42.51(b)(1)(iii); Ex. 2007; *see Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 20 at 2-5 (PTAB Feb. 28, 2018) (finding that documents demonstrating copying and long-felt need must be produced as "routine discovery" because they are inconsistent with Petitioner's obviousness positions). Petitioner responded on October 9, 2024, that it was aware that Patent Owner had responded to the interrogatory by "cit[ing] to some Arashi documents in arguing secondary considerations of non-obviousness." Ex. 2007. However, Petitioner disagreed that it was obligated to produce those identified documents and has, at the time this POPR has been filed, refused to produce those documents. *Id.* If Petitioner and Patent Owner are unable to come to agreement, Patent Owner will seek guidance from the Board. Patent Owner further may request that the Board

These secondary considerations—commercial success, industry praise, long-felt need, unexpected results, and copying by competitors—collectively confirm that the inventions claimed in the '894 Patent were not obvious. Ex. 2001, ¶¶64-74. GoPro's HyperSmooth technology has revolutionized the action camera market, driving consumer demand, earning industry recognition, and prompting competitors to replicate its success. *Id.* For these reasons, the Board should find that the claims of the '894 Patent are non-obvious and uphold their validity.

X. CONCLUSION

For the foregoing reasons, Patent Owner respectfully submits that the Board should uphold the challenged claims.

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grant authority to Patent Owner to file additional briefing once those documents are produced.

PUBLIC VERSION

Date: October 31, 2024

By: */s/ James Glass*

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PUBLIC VERSION

CERTIFICATE OF LENGTH (37 C.F.R. §§ 42.24)

The undersigned hereby certifies that, according to the word-processing system used to prepare the foregoing document, this document has 5,045 words and thus complies with the applicable word limit.

Date: October 31, 2024

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PUBLIC VERSION

CERTIFICATE OF SERVICE (37 C.F.R. §§ 42.6(E), 42.105(A))

The undersigned hereby certifies that the foregoing document was served in its entirety on October 31, 2024 upon the following parties via Electronic Mail:

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