

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,

Petitioner,

v.

PERCEPTIVE AUTOMATA LLC

Patent Owner.

Case No. IPR2025-01573

Patent No. 10,614,344

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF CONTENTS

I.	Introduction.....	1
II.	The '344 Patent And The Challenged Claims.....	2
	A. Overview of the '344 Patent.....	2
	B. Claim Overview	6
III.	Level Of Ordinary Skill.....	8
IV.	Claim Construction.....	9
V.	Applicable Legal Standards.....	9
	A. Claims Cannot Be Found Obvious if an Element Is Missing	11
	B. An IPR Petition Must Address the <i>Graham</i> Factors.....	11
	C. An IPR Petition Must Provide Articulated Reasons With Rational Underpinnings for How and Why the References Would Have Been Combined	13
VI.	The Petition Does Not Demonstrate That The Challenged Claims Are Unpatentable Under Ground 1.....	14
	A. Petitioner Failed to Meet Its Burden of Demonstrating That a POSITA Would Have Been Motivated to Combine Ross and Cox ...	14
	B. 1[b], 10[b], 19[b] – Petitioner Failed to Meet Its Burden of Demonstrating that Ross or Cox Disclose or Render Obvious “output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims.....	16
	C. 1[c], 10[c], 19[c] – Petitioner Failed to Meet Its Burden of Demonstrating that Ross or Cox Disclose or Render Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims.....	23

VII.	The Petition Does Not Demonstrate That The Challenged Claims Are Unpatentable Under Ground 2.....	23
A.	Petitioner Failed to Meet Its Burden of Demonstrating That a POSITA Would Have Been Motivated to Combine Ross, Cox, and Ogale.....	24
B.	1[b], 10[b], 19[b] – Petitioner Failed to Meet Its Burden of Demonstrating that Ross, Cox, or Ogale Disclose or Render Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims.....	27
C.	1[c], 10[c], 19[c] – Petitioner Failed to Meet Its Burden of Demonstrating that Ross, Cox, or Ogale Disclose or Render Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims.....	28
VIII.	The Petition Does Not Demonstrate That The Challenged Claims Are Unpatentable Under Ground 3.....	29
A.	The Petition Does Not Address the <i>Graham</i> Factors or Articulate a Proposed Modification or Supplement to Zhang.	30
B.	1[b], 10[b], 19[b] – Petitioner Failed to Meet Its Burden of Demonstrating that Zhang Discloses or Renders Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims.....	32
C.	1[c], 10[c], 19[c] – Petitioner Failed to Meet Its Burden of Demonstrating that Zhang Discloses or Renders Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims.....	37
IX.	The Challenged Claims Are Entitled To Patentable Weight.....	37
X.	Patent Owner’s Final Comments.....	45
XI.	Conclusion	45

TABLE OF AUTHORITIES

Cases:	Page(s):
<i>Arendi S.A.R.L. v. Apple Inc.</i> , 832 F.3d 1355 (Fed. Cir. 2016)	31
<i>Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.</i> , 776 F.2d 281 (Fed. Cir. 1985).....	22
<i>C R Bard Inc. v. Angiodynamics, Inc.</i> , 979 F.3d 1372 (Fed. Cir. 2020)	38
<i>Carella v. Starlight Archery & Pro Line Co.</i> , 804 F.2d 135 (Fed. Cir. 1986).....	22, 28, 37
<i>CFMT, Inc. v. YieldUp Int’l Corp.</i> , 349 F.3d 1333 (Fed. Cir. 2003)	11, 21
<i>eBay, Inc. v. Paid, Inc.</i> , No. CBM2014-00125, Paper 15 (P.T.A.B. Sept. 30, 2014).....	13, 27
<i>Eizo Corp. v. Barco N.V.</i> , No. IPR2014-00358, Paper 11 (P.T.A.B. July 23, 2014).....	12
<i>FanDuel, Inc. v. Interactive Games LLC</i> , 966 F.3d 1334 (Fed. Cir. 2020)	39
<i>Garmin Int’l, Inc. v. Cuozzo Speed Techs. LLC</i> , Case No. IPR2012-00001, Paper 15 (P.T.A.B. Jan. 9, 2013).....	11
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1966).....	11
<i>Hafeman v. LG Elecs., Inc.</i> , No. 6:21-cv-00696-ADA-DTG, 2023 U.S. Dist. LEXIS 66459 (W.D. Tex. Apr. 17, 2023).....	45

<i>Harmonic Inc. v. Avid Tech., Inc.</i> , 815 F.3d 1356 (Fed. Cir. 2016)	10, 20, 30
<i>In re DiStefano</i> , 808 F.3d 845 (Fed. Cir. 2015).....	38
<i>In re Kahn</i> , 441 F.3d 977, 988 (Fed. Cir. 2006)	13
<i>In re Lowry</i> , 32 F.3d 1579 (Fed. Cir. 1994).....	39
<i>In re Marco Guldenaar Holding B.V.</i> , 911 F.3d 1157 (Fed. Cir. 2018)	39
<i>In re Rijckaert</i> , 9 F.3d 1531 (Fed. Cir. 1993).....	11
<i>In re Royka</i> , 490 F.2d 981 (C.C.P.A. 1974)	11
<i>Innogenetics, N.V. v. Abbott Labs.</i> , 512 F.3d 1363, 1374 (Fed. Cir. 2008)	13
<i>Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.</i> , 821 F.3d 1359 (Fed. Cir. 2016)	21
<i>InVue Sec. Prods., Inc. v. Mobile Tech., Inc.</i> , IPR2019-00078, Paper 7 (PTAB May 1, 2019)	20
<i>Kinetic Techs., Inc. v. Skyworks Sols., Inc.</i> , IPR2014-00529, Paper 8 (P.T.A.B. 2014).....	16
<i>KSR Int’l Co. v. Teleflex Inc.</i> , 550 U.S. 398, 418 (2007).....	13

<i>LG Elecs., Inc. v. Cellular Commc'ns Equip. LLC,</i> IPR2016-00197, Paper 7 (PTAB April 29, 2016)	13
<i>Liberty Mut. Ins. Co. v. Progressive Cas. Ins. Co.,</i> CBM2012-00003, Paper 8 (PTAB Oct. 25, 2012)	10, 30, 32
<i>Moses Lake Indus., Inc. v. Enthone, Inc.,</i> Case No. IPR2014-00243, Paper 6 (P.T.A.B. June 18, 2014).....	13, 27
<i>Praxair Distrib., Inc. v. Mallinckrodt Hosp. Prods. IP Ltd.,</i> 890 F.3d 1024 (Fed. Cir. 2018)	38
<i>SAS Inst., Inc. v. Iancu,</i> 138 S. Ct. 1348 (2018).....	20
<i>TCL Commc'n Tech. Holdings Ltd. v. Dataquill Ltd.,</i> IPR2020-00746, Paper 21 (Sep. 18, 2020)	20
<i>TQ Delta, LLC v. Cisco Sys., Inc.,</i> 942 F.3d 1352 (Fed. Cir. 2019)	16
<i>Upjohn Co. v. Mova Pharm. Corp.,</i> 225 F.3d 1306 (Fed. Cir. 2000)	22, 28, 37
<i>Wellman, Inc. v. Eastman Chem. Co.,</i> 642 F.3d 1355 (Fed. Cir. 2011)	9
<i>Whole Space Industries Ltd. v. Zipshade Industrial (B.V.I.) Corp.,</i> IPR2015-00488 Paper 14 (July 24, 2015)	21
<i>Xerox Corp. v. Bytemark, Inc.,</i> IPR2022-00624, Paper 9 (P.T.A.B. Aug. 24, 2022).....	16
Rules, Statutes and Regulations:	
35 U.S.C. § 103	1, 10, 11
35 U.S.C. § 312	20

35 U.S.C. § 313	1
35 U.S.C. § 314	9
37 C.F.R. § 42.65	<i>passim</i>

I. INTRODUCTION

Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107, Patent Owner Perceptive Automata LLC (“Perceptive”) submits this Preliminary Response to the Petition for *Inter Partes* Review (“Petition”) filed by Tesla, Inc. (“Petitioner”) and challenging claims 1-22 of U.S. Patent No. 10,614,344 (the “’344 patent”) (Ex. 1001). The Board should not institute *inter partes* review because Petitioner has not met its burden of showing a reasonable likelihood of prevailing on any of its proposed grounds of unpatentability, each based on obviousness under 35 U.S.C. § 103(a).

The Petition suffers from fundamental flaws, each of which warrants denial of institution. All Grounds are deficient because Petitioner failed to show that the references disclose or render obvious all limitations of the challenged claims. Grounds 1 and 2 are also deficient because Petitioner did not meet its burden of showing that a person of ordinary skill would be motivated to combine the references as suggested by Petitioner. Ground 3, a single-reference obviousness assertion, is also deficient because Petitioner failed to address the *Graham* factors. In particular, Petitioner failed to articulate the difference between the challenged claims and the Zhang reference, which is the necessary prerequisite for evaluating obviousness. For Ground 3, Petitioner also failed to articulate whether it was proposing to modify the Zhang reference, or proposing to supplement the Zhang reference with the knowledge of a person of ordinary skill. The Petition is entirely unclear on this point.

Finally, for Ground 2, Petitioner failed to articulate why it added Ogale to the Ross-Cox combination of Ground 1. As such, Ground 2 is redundant of Ground 1. These and other defects are set forth more specifically below.

To justify the institution of an *inter partes* review, Petitioner must establish that there is a “reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). For at least the reasons discussed in this preliminary response, Petitioner has not shown a reasonable likelihood to prevail on any of the challenged claims.

II. THE ’344 PATENT AND THE CHALLENGED CLAIMS

A. Overview of the ’344 Patent

The ’344 patent issued on April 7, 2020, from U.S. Patent Application No. 16/512,560, filed July 16, 2019. *See* Ex. 1001. The ’344 patent is a continuation of U.S. Patent Application No. 15/830,549, filed on December 4, 2017, and claims priority to U.S. Provisional Patent Application No. 62/528,771, filed July 5, 2017.¹

¹ As Petitioner notes, the provisional application to which the ’344 patent claims priority predates the priority date of Zhang. Pet. 10. For the limited purpose of this Preliminary Response, Patent Owner does not dispute that the references discussed in the Petition (Ross, Cox, Ogale, and Zhang) are prior art to the ’344 patent. Should

The '344 patent describes and identifies certain problems with autonomously operating a car. As the '344 patent states, “[t]he ability a driver of a car to look at a person—who is walking, driving another car, or riding a bike on or near a street—and predict what that person wants to do may be the single most important part of urban driving.” ’344 patent, 1:21-24. “For example, when a driver of a car sees people near the car, determining whether one person will cross the street, whether another person will remain standing on a street corner, and whether yet another person will change lanes on his or her bicycle is necessary to safely drive the car and avoid hitting the people.” *Id.* at 1:24-29. “This ability is so fundamental, that operating in cities without it would be nearly impossible.” *Id.* at 1:30-31.

The '344 patent describes certain pre-existing methods that fail to adequately address these shortcomings of autonomous vehicles, including that “autonomous driving vehicles may rely on methods that make decisions on how to control the vehicles by predicting ‘motion vectors’ of people near the vehicles.” *Id.* at 1:38-40. As the '344 patent indicates, the conventional methods accomplished this “by collecting data of a person’s current and past movements, determining a motion

the Board institute trial, Patent Owner reserves the right to dispute the prior art status of Zhang.

vector of the person at a current time based on these movements, and extrapolating a future motion vector representing the person's predicted motion at a future time based on the current motion vector.” *Id.* at 1:41-46. As the '344 patent recognizes, “[h]owever, the [conventional] methods do not predict a person's actions or movements based on other observations besides his or her current and past movements, which lead to inferior results in predicting the person's future behavior.” *Id.* at 1:46-49.

The '344 patent specifically describes and claims novel methods, non-transitory computer readable storage media, and systems which address the shortcomings of then-existing autonomous vehicle systems. For example, the '344 patent discloses an embodiment where summary statistics of user responses can be used to train a learning based model so that the learning based model can predict whether an object in the road (e.g., pedestrian) in an image has a given “state of mind—e.g. that a pedestrian is likely to cross the street or that an oncoming vehicle is unlikely to be willing to yield to the vehicle containing the sensor if the vehicle containing the sensor needs to turn.” *Id.* at 10:19-38; *see also id.*, 6:37-7:19, 11:5-12:20. “The trained model or algorithm makes a prediction of what a pedestrian or other person shown in the ‘live data’ would do based on the summary statistics and/or training labels” *Id.* at 7:20-23; *see also id.*, 12:21-13:48. “The predictions

produced by the trained model comprise a set of predictions of the state of mind of road users that can then be used to improve the performance of autonomous vehicles, robots, virtual agents, trucks, bicycles, or other systems that operate on roadways by allowing them to make judgments about the future behavior of road users based on their state of mind.” *Id.* at 7:32-39.

For example, claim 1 of the ’344 patent recites “[a] computer-implemented method comprising” the steps of “receiving, by a computing device associated with an autonomous vehicle operating on a road, sensor data captured by a sensor installed on the autonomous vehicle, the sensor data displaying an object on the road” and “providing the sensor data as input to a supervised learning based model.”

As claim 1 further explains “the supervised learning based model [is] configured to” perform certain functions, *i.e.*, “receive an input sensor data displaying a particular object on a road” and “predict[] an output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users, the user responses associated with the particular object.” For example, given an image of a pedestrian at an intersection an autonomous vehicle is approaching, an embodiment of the claimed model is configured to predict an output statistical summary characterizing a distribution of

what users expect the pedestrian will do (*e.g.*, enter the crosswalk in front of the vehicle, or wait until the vehicle passes).

Claim 1 further provides for “executing the trained supervised learning based model to generate a statistical summary data characterizing a distribution of user responses expected to be received responsive to presenting the sensor data captured by the sensor installed on the autonomous vehicle to users,” and “controlling the operation of the autonomous vehicle on the road based on the generated statistical summary data.”

B. Claim Overview

Independent claims 1, 10, and 19 are reproduced below:

Claim 1	Limitations
1[pre]	A computer-implemented method comprising:
1[a]	receiving, by a computing device associated with an autonomous vehicle operating on a road, sensor data captured by a sensor installed on the autonomous vehicle, the sensor data displaying an object on the road;
1[b]	providing the sensor data as input to a supervised learning based model, the supervised learning based model configured to receive an input sensor data displaying a particular object on a road and predicting an output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users, the user responses associated with the particular object;

1[c]	executing the trained supervised learning based model to generate a statistical summary data characterizing a distribution of user responses expected to be received responsive to presenting the sensor data captured by the sensor installed on the autonomous vehicle to users; and
1[d]	controlling the operation of the autonomous vehicle on the road based on the generated statistical summary data.
Claim 10	Limitations
10[pre]	A non-transitory computer readable storage medium storing instructions that when executed by one or more processors, cause the one or more processors to perform the steps comprising:
10[a]	receiving, by a computing device associated with an autonomous vehicle operating on a road, sensor data captured by a sensor installed on the autonomous vehicle, the sensor data displaying an object on the road;
10[b]	providing the sensor data as input to a supervised learning based model, the supervised learning based model configured to receive an input sensor data displaying a particular object on a road and predicting an output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users, the user responses associated with the particular object;
10[c]	executing the trained supervised learning based model to generate a statistical summary data characterizing a distribution of user responses expected to be received responsive to presenting the sensor data captured by the sensor installed on the autonomous vehicle to users; and
10[d]	controlling the operation of the autonomous vehicle on the road based on the generated statistical summary data.

Claim 19	Limitations
19[pre]	A computing system comprising: one or more processors; and a non-transitory computer readable storage medium, storing instructions that when executed by the one or more processors, cause the one or more processors to perform steps comprising:
19[a]	receiving, by a computing device associated with an autonomous vehicle operating on a road, sensor data captured by a sensor installed on the autonomous vehicle, the sensor data displaying an object on the road;
19[b]	providing the sensor data as input to a supervised learning based model, the supervised learning based model configured to receive an input sensor data displaying a particular object on a road and predicting an output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users, the user responses associated with the particular object;
19[c]	executing the trained supervised learning based model to generate a statistical summary data characterizing a distribution of user responses expected to be received responsive to presenting the sensor data captured by the sensor installed on the autonomous vehicle to users; and
19[d]	controlling the operation of the autonomous vehicle on the road based on the generated statistical summary data.

III. LEVEL OF ORDINARY SKILL

Petitioner alleges that a POSITA in the field of the '344 patent “would have had at least: (1) a bachelor’s degree in electrical engineering, computer engineering, computer science, or equivalent course work, with three years of work experience in

computer vision, autonomous vehicles, and/or machine learning; or (2) a master's degree in electrical engineering, computer engineering, computer science, or equivalent course work, with a focus in computer vision, autonomous vehicles, and/or machine learning.” Pet. 17. For the limited purpose of this Preliminary Response, Patent Owner does not contest Petitioner's definition of a person of ordinary skill in the art, but it reserves the right to do so if trial is instituted.

IV. CLAIM CONSTRUCTION

Petitioner alleges that “there is no need for claim construction” in this proceeding. Pet. 17. Patent Owner submits that the Board need not construe any claim terms in a particular manner to arrive at the conclusion that the Petition is substantively deficient. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (claims “need only be construed ‘to the extent necessary to resolve the controversy’”). Should the Board determine to institute trial in this proceeding, Patent Owner reserves the right to argue for construction of certain claim terms.

V. APPLICABLE LEGAL STANDARDS

The Board may only grant a petition for *inter partes* review where “the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); 37 C.F.R. § 42.108(c). Petitioner bears the

burden of showing that this statutory threshold has been met. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (“[T]he Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”); *Liberty Mut. Ins. Co. v. Progressive Cas. Ins. Co.*, CBM2012-00003, Paper 8 at 14-15 (PTAB Oct. 25, 2012) (representative) (“[I]t is the responsibility of the Petitioner to clearly articulate [the proposed combination].”); 37 C.F.R. §§ 42.22(a)(2), 42.104(b)(4); *see also* Trial Practice Guide (Dec. 12, 2025) at Statutory Requirements in the Introduction (“The Board . . . may institute a trial where the petitioner establishes that the standards for instituting the requested trial are met Conversely, the Board may not authorize a trial where the information presented in the petition, taking into account any patent owner preliminary response, fails to meet the requisite standard for instituting the trial.”).

Each of Petitioner’s Grounds relies on obviousness. Section 103 of the Patent Act provides that “[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a). The obviousness analysis requires several threshold inquiries identified below.

A. Claims Cannot Be Found Obvious if an Element Is Missing

If a single element of the claim is absent from the prior art, the claim cannot be considered obvious. *See CFMT, Inc. v. YieldUp Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (“Obviousness requires a suggestion of all limitations in a claim.”) (citing *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974)); *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (reversing obviousness rejection where prior art did not teach or suggest all claim limitations); *Garmin Int’l, Inc. v. Cuozzo Speed Techs. LLC*, No. IPR2012-00001, Paper 15 at 15 (P.T.A.B. Jan. 9, 2013) (refusing to institute an IPR under 35 U.S.C. § 103 where prior art did not disclose all claim limitations).

B. An IPR Petition Must Address the *Graham* Factors

Obviousness is resolved on a number of factual determinations including: (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of ordinary skill in the art. *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966); *see also* 35 U.S.C. § 103(a) (“A patent may not be obtained . . . *if the differences between the subject matter sought to be patented and the prior art* are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.”) (emphasis added). These factors provide the threshold “background” for the obviousness

determination, and without undertaking an analysis of the *Graham* factors, a proper obviousness determination cannot be made. *Graham*, 383 U.S. at 18 (“Under § 103, the scope and content of the prior art are to be determined; *differences between the prior art and the claims at issue are to be ascertained*; and the level of ordinary skill in the pertinent art resolved. *Against this background, the obviousness or nonobviousness of the subject matter is determined.*”) (emphasis added).

In view of this clear Supreme Court precedent, it is not surprising that petitions for IPR “must address the *Graham* factors.” *Eizo Corp. v. Barco N.V.*, No. IPR2014-00358, Paper 11 at 29-30 (P.T.A.B. July 23, 2014) (citing *Graham*, 383 U.S. at 17-18). For example, the Board faulted the petitioner in *Eizo* for failing to identify the differences between the claimed subject matter and the prior art. *Id.* at 29-30. In particular, the Board found insufficient the petitioner’s “conclusory assertion” that “[t]o the extent [the first reference] may not explicitly teach” the limitation, the second reference “explicitly teaches this limitation.” *Id.* at 30. The Board explained that “such an assertion *fails* to resolve the exact differences sought to be derived from” the second reference. *Id.* (finding that petitioner had not shown a reasonable likelihood of prevailing on that ground). Other Board decisions have reached the same result. *See, e.g., Moses Lake Indus., Inc. v. Enthone, Inc.*, No. IPR2014-00243,

Paper 6 at 18 (P.T.A.B. June 18, 2014); *eBay, Inc. v. Paid, Inc.*, No. CBM2014-00125, Paper 15 at 21 (P.T.A.B. Sept. 30, 2014).

C. An IPR Petition Must Provide Articulated Reasons With Rational Underpinnings for How and Why the References Would Have Been Combined

The conclusion of obviousness based on a combination of references must be supported with explicit analysis of a reason to combine those references. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). The Federal Circuit has stated that such reasons must be more than “mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *accord Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 (Fed. Cir. 2008) (agreeing with the district court’s reasoning that “some kind of motivation must be shown from some source, so that the jury can understand why a person of ordinary skill would have thought of either combining two or more references or modifying one to achieve the patented method”); *see also LG Elecs., Inc. v. Cellular Commc’ns Equip. LLC*, IPR2016-00197, Paper 7 at 7-11 (PTAB April 29, 2016) (faulting a petition’s obviousness analysis for lack of sufficient articulated reasons with rational underpinnings for modifying references to achieve particular elements required in the claims).

VI. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 1

For Ground 1, Petitioner contends that Ross in view of Cox renders claims 1-22 obvious. *See* Pet. 11. But Ross and Cox fail to disclose a number of limitations in independent claims 1, 10, and 19, and Petitioner provides no meaningful explanation about how it would have been obvious to modify these references to add those missing limitations. In addition, Petitioner's proposed motivation to combine Ross and Cox is fundamentally flawed. Petitioner has thus failed to demonstrate that the challenged claims are unpatentable under Ground 1.

A. Petitioner Failed to Meet Its Burden of Demonstrating That a POSITA Would Have Been Motivated to Combine Ross and Cox

The Petition alleges that "Ross alone renders obvious most limitations of the Challenged Claims." Pet. 18. The Petition alleges that a POSITA would have been motivated to combine Ross with Cox "to render obvious the remaining limitations, which relate to a supervised learning model and predicting outputs that reflect 'user responses expected to be received.'" *Id.* According to Petitioner, "[a] POSITA would have been motivated to combine Ross and Cox such that Ross's intent model is a supervised learning model that is trained with human annotated image data, as taught by Cox (providing the 'Ross-Cox model')." Pet. 20.

Petitioner's proposed combination of Ross and Cox is fundamentally flawed, and Petitioner fails to provide any explanation (much less any articulated reasoning

with rational underpinnings) for why a POSITA would have been motivated to combine Ross and Cox generally, much less how doing so would arrive at the claimed inventions. Nothing in the Challenged Claims discusses or requires “human annotated image data” allegedly found in Cox. Moreover, Ross’s system aims to predict the intents of objects seen by a vehicle’s perception system (*e.g.*, whether and when a pedestrian will enter a crosswalk in the path of the vehicle). *See, e.g.*, Ex. 1004, 1:55-56 (“In one example, the prediction of the intent includes the road user crossing the roadway in a crosswalk.”). In contrast, Cox’s annotations are aimed at identifying what the content of an image is (*e.g.*, a face), or what emotion an annotator believes a face in an image reflects (*e.g.*, happy). *See* Ex. 1005 at, *e.g.*, [0016]. Nothing in Cox discloses or suggests that its annotations provide (or could be used to derive) the intent of, for example, a person on a road in an image shown to an annotator. Nowhere does the Petition provide any explanation—much less any articulated reasoning with rational underpinnings—for why a POSITA would have been motivated to combine Ross and Cox in the manner the Petition suggests despite these express differences between the aims of Ross and Cox.

Petitioner’s expert declaration fares no better. Rather than providing any further explanation, Petitioner’s expert (Dr. Janét) simply parrots the language and citations from the Petition. *Compare* Ex. 1003, ¶¶ 80-85 *with* Pet. 20-24. As the

Board and the Federal Circuit have repeatedly concluded, conclusory expert testimony that adds nothing to the obviousness analysis is entitled to little to no weight. *See, e.g., Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, at 15, 19 (P.T.A.B. Aug. 24, 2022) (denying institution); *Kinetic Techs., Inc. v. Skyworks Sols., Inc.*, IPR2014-00529, Paper 8 at 14-15 (P.T.A.B. 2014) (same); *see also TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) (“[A] conclusory assertion with no explanation is inadequate to support a finding that there would have been a motivation to combine.”); *In re Kahn*, 441 F.3d at 988 (requiring “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”).

Petitioner’s proposed combination is thus fundamentally flawed and should be rejected.

B. 1[b], 10[b], 19[b] – Petitioner Failed to Meet Its Burden of Demonstrating that Ross or Cox Disclose or Render Obvious “output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims

Even if a POSITA would have been motivated to combine Ross and Cox in the manner Petitioner suggests (which is not the case), the resulting combination would have still failed to disclose or render obvious limitation [b] of each challenged independent claim. Limitation [b] of each independent claim recites in-part “predicting an output statistical summary characterizing a distribution of user

responses expected to be received responsive to presenting the sensor data to a plurality of users, the user responses associated with the particular object.”² Petitioner acknowledges that Ross fails to teach, suggest, or disclose “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users.” *See* Pet. at 31-33. Indeed, as the Petition points out, Ross at best discloses the use of a “perception system” to generate data that an “intent model” uses to generate a “set of possible intents or hypotheses identifying possible next actions (and predicted trajectories), a given point in time when the action is likely to occur, and associated likelihood values.” Pet. 26, 28, 30. As Petitioner implicitly acknowledges, Ross does not disclose how the “set of possible intents or hypotheses” or “associated likelihood values” are generated or what form they take. *See id.* at 30-31. Thus, Petitioner has not alleged (nor could it) that Ross teaches, suggests, or discloses that its intent model provides “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users,” as required by independent claims 1, 10, and 19.

² Patent Owner addresses independent claim 1 as to all Grounds because claim 1 is the independent claim that Petitioner focuses on for all Grounds. *See, e.g.,* Pet. at 24-37, 44, 46.

Despite not expressly acknowledging this difference between Ross and the challenged claims (a fatal flaw in the Petition, *see* Section VI.A), the Petition attempts to cure this shortcoming by discussing disclosures from Cox. *See* Pet. 31-33. While the Petition presents two different theories for how Cox supposedly addresses this flaw in Ross, neither theory has any merit.

Petitioner first alleges that, “as applied to Ross . . . , Cox teaches that the output of the Ross-Cox model *should* reflect the likely responses from human annotators, including with respect to the state of mind of subjects in analyzed images.” Pet. 31-32 (emphasis added). Petitioner’s allegations that the combination “should” include a feature—without pointing to any express disclosure (or arguing any type of inherent disclosure)—cannot satisfy Petitioner’s burden. Indeed, nothing in Cox suggests that its annotations or resulting data reflect “the state of mind” of an object in the road. At best, Cox discloses annotating images to reflect perceived emotions shown on faces in images. *See* Ex. 1005 at, *e.g.*, [0016]. However, the Petition offers no evidence or explanation for how an annotation of a perceived emotion (*e.g.*, happy) relates to or could bear on the intents that Ross’s model predicts (*e.g.*, whether and when a pedestrian will step into a crosswalk).

Petitioner’s second theory is that Cox somehow teaches this element because, “as applied to Ross, Cox teaches model training that would have included comparing

Ross's predictions to the human labeled training data to identify prediction errors and optimizing the Ross-Cox model such that the errors are minimized." Pet. 33. Even if Cox's disclosures were combined with Ross (which a POSITA would not have been motivated to do, *see* Section VI.A), they would not yield "a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users," as required by independent claims 1, 10, and 19. Petitioner alleges that, when combined with Ross, Cox's "various human annotator responses thus indicate possible next actions and state of mind of the object (e.g., vehicle, pedestrian, bicyclist) that human annotators would have identified for the object in the raw camera data and responded with when observing the raw camera data input into the Ross-Cox model." Pet. 32. But nothing in Cox suggests such annotations, much less any teaching, suggestion, or disclosure about possible next actions or objects in a road. As stated, Cox merely discloses annotations identifying the content of the image (e.g., a face) or identifying a perceived emotion (e.g., happy) of a face, not an object in the road. *See* Ex. 1005 at, e.g., [0016].

For at least this claim limitation, Petitioner relies on long string cites to allege in conclusory fashion what it claims the references disclose, but Petitioner does not specifically identify disclosure from the references that teaches or suggests a particular claim element. *See* Pet. at 30-33. This is not the particularity required by

statute. To the contrary, this approach “would require the panel or the Patent Owner to scour the Petition to discern Petitioner’s evidence ... which lacks particularity and is tantamount to impermissibly shifting Petitioner’s burden under 35 U.S.C. § 312(a)(3).” *InVue Sec. Prods., Inc. v. Mobile Tech., Inc.*, IPR2019-00078, Paper 7 at 15 (PTAB May 1, 2019).

For at least these reasons, Ground 1 should be rejected. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (“[T]he Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”); *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (“rather than create (another) agency-led, inquisitorial process for reconsidering patents, Congress opted for a party-directed, adversarial process”); 37 C.F.R. § 42.22(a)(2) (“Each petition ... must include ... a detailed explanation of the significance of the evidence including material facts, and the governing law, rules, and precedent.”); 37 C.F.R. § 42.104(b)(4) (“The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon.”); 35 U.S.C. § 312(a)(3) (Petitioner bears the burden of identifying “in writing and with particularity . . . the evidence that supports the grounds for the challenge to each claim”); *TCL Commc’n Tech. Holdings Ltd. v. Dataquill Ltd.*, IPR2020-00746, Paper 21 at 22 (Sep. 18, 2020) (“It is Petitioner’s responsibility to cite specific

evidence to support its arguments, not the Board’s”—nor Patent Owner’s—“responsibility to piece together evidence or speculate as to Petitioner’s position.”); *see also Whole Space Industries Ltd. v. Zipshade Industrial (B.V.I.) Corp.*, IPR2015-00488 Paper 14 at 18 (July 24, 2015) (citations omitted). Indeed, the Federal Circuit has emphasized that “[i]t is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016).

Furthermore, Petitioner does not even allege that a single reference teaches, suggests, or discloses “output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users.” *See* Pet. at 28-33. If a single element of the claim is absent from the prior art, the claim cannot be considered obvious. *See CFMT, Inc.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003).

Petitioner’s expert declaration likewise fails to address these issues. Instead, Dr. Janét here again largely parrots the language of the Petition without adding further evidence or discussion. *Compare* Ex. 1003, ¶¶ 96-102 *with* Pet. 30-33. The Board should thus give Dr. Janét’s opinions little to no weight. *See, e.g., Xerox*,

Paper 9, at 15, 19; *Kinetic Techs*, Paper 8 at 14-15; *see also* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) (“Lack of factual support for expert opinion to factual determinations, however, may render the testimony of little probative value in a validity determination.”) (quoting *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985)); *Carella v. Starlight Archery & Pro Line Co.*, 804 F.2d 135, 138 (Fed. Cir. 1986) (“Although in some circumstances unsupported oral testimony can be sufficient to provide prior knowledge or use, it must be regarded with suspicion and subjected to close scrutiny.”).

Thus, Petitioner has failed to meet its burden of demonstrating that the combination of Ross and Cox discloses or renders obvious an “output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users,” as required by independent claims 1, 10, and 19.

C. 1[c], 10[c], 19[c] – Petitioner Failed to Meet Its Burden of Demonstrating that Ross or Cox Disclose or Render Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims

Element [c] of independent claims 1, 10, and 19 likewise requires “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users.” For these limitations, the Petition simply refers back to its discussion of element 1[b]. Pet. 35. Petitioner has failed to meet its burden of demonstrating that the combination of Ross and Cox discloses or renders obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” for element [c] for the same reasons as discussed in Section VI.B above with respect to element [b].

VII. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 2

For Ground 2, Petitioner contends that Ross in view of Cox and Ogale renders claims 1-22 obvious. Petitioner’s proposed combination of Ross, Cox and Ogale suffers from the same flaws as its proposed combination of Ross and Cox in Ground 1, *i.e.*, that (i) the proposed combination is fundamentally flawed, and (ii) even if the references were combined, they fail to disclose elements [b] and [c] of the challenged independent claims. Petitioner has thus failed to demonstrate that the challenged claims are unpatentable under Ground 2.

A. Petitioner Failed to Meet Its Burden of Demonstrating That a POSITA Would Have Been Motivated to Combine Ross, Cox, and Ogale

According to the Petition, Ground 2 merely adds Ogale to Petitioner's proposed combination "to the extent that the Patent Owner argues, or the Board finds, that the predictions generated by the Ross-Cox model do not correspond to (1) user responses expected to be received responsive to presenting the sensor data to a plurality of users or (2) user responses expected to be received responsive to presenting the sensor data captured by the sensor installed on the autonomous vehicle to users." Pet. 48. And, as the Petition expressly alleges, Petitioner is only attempting to add Ogale to its proposed combination of Ross and Cox because Ogale allegedly "makes clear through its disclosure that human annotated training data used to train a predictive model provides that trained model outputs reflect how human annotators would have annotated the input data." Pet. 53.

As discussed in Section VI.A above, a POSITA would not have been motivated to combine Ross and Cox in the manner Petitioner suggests, nor has Petitioner provided any articulated reasoning with rational underpinnings for why a POSITA would have done so or how such a combination would have yielded the claimed inventions. Petitioner's addition of Ogale to the proposed combination does nothing to change that result, nor do Petitioner's arguments concerning Ogale provide the required articulated reasoning with rational underpinnings for the

proposed three-reference combination. As discussed above, Ross’s system aims to predict the intents of objects seen by a vehicle’s perception system (*e.g.*, whether and when a pedestrian will enter a crosswalk in the path of the vehicle), whereas Cox’s annotations are aimed at identifying what the content of an image is (*e.g.*, a face), or what emotion an annotator believes a face in an image reflects (*e.g.*, happy). Ex. 1004 at, *e.g.*, 1:55-56; Ex. 1006 at, *e.g.*, [0016]. Nothing in Cox discloses or suggests that its annotations provide (or could be used to derive) information about Ross’s alleged intent of an object in the road (*e.g.*, a pedestrian), nor does Ogale address this problem. Neither the Petition nor Petitioner’s expert provide any explanation—much less any articulated reasoning with rational underpinnings—for why a POSITA would have been motivated to combine Ross, Cox, and Ogale in the manner the Petition suggests despite these express differences between the aims of Ross and Cox.

Here again, Petitioner’s expert declaration does not add anything to the obviousness analysis, instead just parroting the language from the Petition. *Compare* Ex. 1003, ¶¶143-146 *with* Pet. 48-51. The Board should thus give Dr. Janét’s testimony little to no weight. *See, e.g., Xerox C*, Paper 9, at 15, 19; *Kinetic Techs*, Paper 8 at 14-15; *TQ Delta*, 942 F.3d at 1359; *In re Kahn*, 441 F.3d at 988.

Even though petitions for IPR “must address the *Graham* factors,” Petitioner’s Ground 2 allegations fail to do so. *See Eizo Corp. v. Barco N.V.*, Case No. IPR2014-00358, Paper 11 at 29–30 (P.T.A.B. July 23, 2014) (citing *Graham*, 383 U.S. at 17–18). Here, Petitioner alleges that “to the extent that the Patent Owner argues, or the Board finds, that the predictions generated by the Ross-Cox model do not correspond to (1) user responses expected to be received responsive to presenting the sensor data to a plurality of users or (2) user responses expected to be received responsive to presenting the sensor data captured by the sensor installed on the autonomous vehicle to users.” Pet. 48. However, this type of conclusory analysis fails to identify the differences between the claimed subject matter and the prior art and is insufficient. For example, the Board faulted the petitioner in *Eizo Corp.* for failing to identify the differences between the claimed subject matter and the prior art. *Id.* at 29–30. In particular, the Board found insufficient the petitioner’s “conclusory assertion” that “[t]o the extent [the first reference] may not explicitly teach” the limitation, the second reference “explicitly teaches this limitation.” *Id.* at 30. The Board explained that “such an assertion fails to resolve the exact differences sought to be derived from” the second reference. *Id.* (finding that petitioner had not shown a reasonable likelihood of prevailing on that ground). Other Board decisions have reached the same result. *See, e.g., Moses Lake Indus., Inc. v. Enthone, Inc.*, Case No.

IPR2014-00243, Paper 6 at 18 (P.T.A.B. June 18, 2014); *eBay, Inc. v. Paid, Inc.*, Case No. CBM2014-00125, Paper 15 at 21 (P.T.A.B. Sept. 30, 2014).

Petitioner's proposed combination is thus fundamentally flawed and should be rejected.

B. 1[b], 10[b], 19[b] – Petitioner Failed to Meet Its Burden of Demonstrating that Ross, Cox, or Ogale Disclose or Render Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims

Even if a POSITA would have been motivated to combine Ross, Cox, and Ogale in the manner Petitioner suggests (which is not the case), the resulting combination still fails to disclose or render obvious limitation [b] of each challenged independent claim.

Petitioner largely cites to and/or regurgitates its analysis of this limitation from Ground 1. *See* Pet. 51-53. As discussed in Section VI.B above, however, Petitioner admits Ross does not disclose this limitation, and Petitioner's two theories for how Cox supposedly discloses it both fail. The addition of Ogale to the proposed combination does not alter those conclusions. Petitioner merely relies on Ogale for the assertion that “human annotated training data used to train a predictive model provides that trained model outputs reflect how human annotators would have annotated the input data.” Even taking that assertion as true, it does not address the deficiencies of Ross and Cox as to “a distribution of user responses expected to be

received responsive to presenting the sensor data to a plurality of users” for the reasons discussed in Section VI.B above.

Petitioner’s expert declaration again adds nothing to the obviousness analysis here, instead parroting the language of the Petition. *Compare* Ex. 1003, ¶¶ 149-152 with Pet. 51-53. The Board should thus give Dr. Janét’s opinions little to no weight. *See, e.g., Xerox*, Paper 9, at 15, 19; *Kinetic Techs*, Paper 8 at 14-15; *see also* 37 C.F.R. § 42.65(a); *Upjohn*, 225 F.3d at 1311; *Carella*, 804 F.2d at 138.

Furthermore, Petitioner again fails to allege that a single reference teaches, suggests, or discloses “output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users.” *See* Pet. at 51-53. If a single element of the claim is absent from the prior art, the claim cannot be considered obvious. *See CFMT, Inc.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003).

Accordingly, Petitioner failed to meet its burden of demonstrating that the combination of Ross, Cox, and Ogale discloses or renders obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users,” as required by independent claims 1, 10, and 19.

C. 1[c], 10[c], 19[c] – Petitioner Failed to Meet Its Burden of Demonstrating that Ross, Cox, or Ogale Disclose or Render Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of

the Independent Claims

Element [c] of independent claims 1, 10, and 19 requires “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users.” For this aspect, the Petition simply refers back to its discussion of element [1b]. Pet. 53-56. Petitioner has failed to meet its burden of demonstrating that the combination of Ross, Cox, and Ogale discloses or renders obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” for element [c] for the same reasons as discussed in Section VII.B above with respect to element [b].

VIII. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 3

For Ground 3, Petitioner contends that Zhang renders claims 1-4, 7-13, and 16-22 obvious. Pet. 57. As set forth below, Petitioner’s allegations are impermissibly vague and do not satisfy Petitioner’s threshold burden. Despite alleging that Zhang alone renders the claims obvious, the Petition does not address the *Graham* factors, including the requirement that Petitioner identify the differences between the challenged claims and Zhang, and it does not clearly state how Petitioner proposes to overcome these differences in its single-reference obviousness assertion. Additionally, for limitations 1[b] and 1[c] (and similar limitations from the other independent claims), Petitioner string cites to multiple pages of Zhang, spanning

different embodiments, sometimes without specifying where the limitation at issue is found within those swaths of disclosure. For these same limitations, Petitioner cites to disclosure from Zhang, but it does not articulate how or why it meets the claim language at issue. Because Petitioner has not shown with particularity why the challenged claims are unpatentable, the Board should reject this ground. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d at 1363 (Fed. Cir. 2016) (“[T]he Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”); *Liberty Mut. Ins. Co. v. Progressive Cas. Ins. Co.*, CBM2012-00003, Paper 8 at 14-15 (PTAB Oct. 25, 2012) (representative) (“[W]e address only the basis, rationale, and reasoning put forth by the Petitioner and resolve all vagueness and ambiguity in Petitioner’s arguments against the Petitioner. . . . [I]t is the responsibility of the Petitioner to clearly articulate [the proposed combination].”).

Beyond failing to meet its threshold burden, Zhang fails to disclose certain limitations in independent claims 1, 10, and 19. For this additional reason, Petitioner failed to demonstrate that the challenged claims are unpatentable under Ground 3.

A. The Petition Does Not Address the *Graham* Factors or Articulate a Proposed Modification or Supplement to Zhang.

As set forth in Section V.B, the Petition’s Ground 3 obviousness assertion must address the *Graham* factors, which include a requirement to explain the

differences between the challenged claims and the prior art. As Ground 3 is a single-reference obviousness assertion (as opposed to an anticipation theory), Petitioner presumably proposes to modify Zhang to arrive at the challenged claims. *See, e.g., Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016). (“Though less common, in appropriate circumstances, a patent can be obvious in light of a single prior art reference if it would have been obvious to modify that reference to arrive at the patented invention.”). But the Petition is not clear on this point. Petitioner fails to articulate differences between the challenged claims and Zhang, and it does not specify a manner in which it proposes to modify Zhang to invalidate the challenged claims.

To the extent Petitioner’s Ground 3 obviousness allegations attempt to supplement an alleged missing element in Zhang with expert testimony, the Petition is equally deficient. Again, the Petition does not specify the element of the challenged claims that is not disclosed by Zhang, much less articulate how it proposes to supplement Zhang with the knowledge of a person of ordinary skill to plug such hole. This is not a trivial oversight, as it is improper to supply a missing element with expert testimony. *See* Trial Practice Guide (December 12, 2025) at § I.G. (“[B]ecause an *inter partes* review may only be requested ‘on the basis of prior art consisting of patents or printed publications,’ 35 U.S.C. § 311(b), expert

testimony cannot take the place of disclosure from patents or printed publications. In other words, expert testimony may explain ‘patents and printed publications,’ but is not a substitute for disclosure in a prior art reference itself.”).

Notably, it is not Patent Owner’s job to read between the lines of the Petition. *See Liberty Mut. Ins. Co. v. Progressive Cas. Ins. Co.*, CBM2012-00003, Paper 8 at 14-15 (Oct. 25, 2012) (representative) (“[W]e address only the basis, rationale, and reasoning put forth by the Petitioner and resolve all vagueness and ambiguity in Petitioner’s arguments against the Petitioner.”) Petitioner has not met its burden to clearly articulate its Ground 3 obviousness case. Because the Petition does not address the *Graham* factors, including a discussion of the shortcomings of Zhang and how it proposes to address them, the Board should reject Ground 3.

B. 1[b], 10[b], 19[b] – Petitioner Failed to Meet Its Burden of Demonstrating that Zhang Discloses or Renders Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims

Limitation [b] of each independent claim recites in-part: “predicting an output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users, the user responses associated with the particular object.” There are several deficiencies with Petitioner’s allegations for limitation [b].

As an initial matter, Petitioner’s allegations for limitation [b] are difficult to follow because they repeatedly cite to wide swaths of disclosure from Zhang. For example, on pages 64-66, the Petition repeatedly cites Zhang’s “Abstract, ¶¶0025, 0047, 0049, 0051-0065, claims 1, 4, 5, Figs. 4, 5, 9, 10” and “Abstract, ¶¶0025, 0047, 0049, 0051-0065, claims 1, 4, 5, Figs. 4, 5, 9, 10.” Supporting allegations by citing wide swaths of Zhang’s disclosure makes the Petition impossible to decipher. For example, paragraphs 0051-0065 of Zhang span four pages. In these four pages, Zhang discusses at least Figures 7 through 10. These paragraphs cover multiple embodiments of Zhang, as Zhang refers several times to “an example embodiment” or “a particular embodiment” in this swath of disclosure. Worse still, between paragraphs 61 and 62, Zhang includes a section heading that reads “Alternative Embodiment of the Prediction-Based System and Method for Trajectory Planning of Autonomous Vehicles.” Neither Petitioner nor its expert address, much less resolve, the fact that many of its citations from paragraphs 0051-0065 appear in different embodiments. By failing to specify with any particularity the portions of Zhang relied upon in support of its allegations, and by failing to reconcile citations to multiple embodiments from Zhang, Petitioner has failed to meet its burden. *See Liberty Mut.*, Paper 8 at 14-15.

Setting aside this significant deficiency, Petitioner fails to adequately explain its mapping of limitation [b] to Zhang. As best Patent Owner can discern, the crux of Petitioner's allegations are: (1) "Zhang explains that '[b]ecause the trajectory prediction module 175 is trained in the training phase using real world, human behavior data, the predicted behavior and trajectories of vehicles or objects produced by the trajectory prediction module 175 are closely correlated to the actual behavior and trajectories of vehicles in real world environments with human drivers'; (2) "human labelers would have identified for the object in the image data and responded with by labeling in the data when presented with the data"; and (3) "[t]he model predicts these behaviors by being trained on the training data of human labels from humans observing training images of human driving behavior, with the training (and use of a loss function) reducing the error between human labels and the predicted behaviors/trajectories." Pet. at 64-65 (citations omitted). It appears Petitioner is claiming that Zhang's model trains on real world sensor data, and the model's "error" is reduced using a loss function that presumes the human label data to be correct.

In interpreting these allegations, it is critical to note that Zhang's labelers do nothing other than to label what the training data actually shows. Ex. 1006 at [0051] ("[T]he labels or labeling data can include context information that defines the

directionality and rate behaviors of the vehicles represented in the training data.”), [0064] (“[T]he training data can include data representing vehicle actions such as, turning left or right, maintaining a straight direction, accelerating or decelerating, performing an accelerating or decelerating turn, passing another vehicle, or the like.”). Petitioner does not allege that Zhang’s labelers respond with what the labeler would expect to happen when presented with training data.

According to Petitioner, “Zhang’s ‘set of predicted trajectories and confidence levels’ teaches *an output statistical summary*” because “[t]he set of predicted trajectories and confidence levels summarize the various trajectories than an object in image data might take and the confidences associated with each prediction.” Pet. 63-64. Petitioner then posits that “[t]his provides a statistical distribution and organization reflecting how an object is predicted to travel within the environment of Zhang’s autonomous vehicle, and how likely each prediction is.” *Id.* at 64.

The “punch line” for Petitioner’s limitation [b] allegations is that “[t]he ‘set of predicted trajectories and confidence levels’ (*output statistical summary*) therefore reflects the distribution of the various human labeler responses (*characterizing a distribution of user responses*) indicating possible trajectories/behaviors of the object (e.g., a moving vehicle) that human labelers would have identified for the object in the image data and responded with by labeling

in the data when presented with the data (*expected to be received responsive to presenting the sensor data to a plurality of users, the user responses associated with the particular object*).” Pet. 65-66. Petitioner again cites to a wide swath of Zhang in support of this assertion (and one paragraph from its expert declaration): “EX1006, Abstract, ¶¶0025, 0047, 0049, 0051- 0065, claims 1, 4, 5, Figs. 4, 5, 9, 10; EX1003, ¶175.” In making this assertion, the Petition fails to explain how the “output statistical summary,” which Petitioner alleges is Zhang’s object trajectory and confidence levels for an object, constitutes “the distribution of the various human labeler responses (*characterizing a distribution of user responses*) indicating possible trajectories/behaviors of the object.” And nothing in the cited portions of Zhang discloses a “distribution of [] human labeler responses [] indicating possible trajectories/behaviors of the object.” As stated, the portions of Zhang cited by Petitioner merely state that Zhang’s labelers indicate what actually occurred, not what the labels predict to occur or “*possible* trajectories/behaviors of the object.” Petitioner’s claim that Zhang’s model outputs a “distribution of the various human labeler responses [] indicating possible trajectories/behaviors of the object” is wholly unexplained and not supported by Zhang.

On this point, Petitioner’s expert declaration adds nothing to the obviousness analysis, instead just parroting the language of the Petition. *Compare* Ex. 1003, ¶¶

172-177 *with* Pet. 63-67. The Board should thus give Dr. Janét’s opinions little to no weight. *See, e.g., Xerox*, Paper 9, at 15, 19; *Kinetic Techs*, Paper 8 at 14-15; *see also* 37 C.F.R. § 42.65(a); *Upjohn*, 225 F.3d at 1311; *Carella*, 804 F.2d at 138.

For these reasons, Petitioner has failed to meet its burden of demonstrating that Zhang discloses or renders obvious elements 1[b], 10[b] and 19[b]. This failure to show an element of all independent claims is fatal to Ground 3.

C. 1[c], 10[c], 19[c] – Petitioner Failed to Meet Its Burden of Demonstrating that Zhang Discloses or Renders Obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” of the Independent Claims

Element [c] of each of independent claims 1, 10, and 19 likewise requires “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users.” For these limitations, the Petition simply refers back to its discussion of element 1[b]. Pet. 67-69. For the same reasons discussed above, Petitioner has failed to meet its burden of demonstrating that Zhang discloses or renders obvious “a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users” for elements 1[c], 10[c], and 19[c].

IX. THE CHALLENGED CLAIMS ARE ENTITLED TO PATENTABLE WEIGHT

The determination of whether a claim limitation is entitled to patentable weight under the printed matter doctrine comprises a two-part analysis as set forth

in *In re DiStefano*, 808 F.3d 845, 848-851 (Fed. Cir. 2015). To be considered printed matter, the claim limitation in question “must be matter claimed for what it communicates.” *Id.* at 849. Furthermore, the claim limitation is printed matter “only if it claims the content of information.” *Id.* at 848. “Only if the limitation in question is determined to be printed matter does one turn to the question of whether the printed matter nevertheless should be given patentable weight.” *Id.* at 850.

Printed matter is given patentable weight if the “claimed informational content has a functional or structural relationship to the substrate.” *Id.* A limitation deemed to be printed matter is entitled to patentable weight if it is “interrelated with the rest of the claim.” *Praxair Distrib., Inc. v. Mallinckrodt Hosp. Prods. IP Ltd.*, 890 F.3d 1024, 1033 (Fed. Cir. 2018) (“By interrelating the claimed information regarding correlations between nitric oxide, LVD, and pulmonary edema with the concrete step of discontinuing treatment of the information . . . the printed matter . . . has a functional relationship to the rest of the claim[,] giving the printed matter patentable weight.”). The Federal Circuit has also stated that it “consider[s] whether the printed matter merely informs people of the claimed information, or whether it instead interacts with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process.” *C R Bard Inc. v. Angiodynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020).

As an initial matter, Petitioner improperly attempts to shift the burden to Patent Owner by stating that “[p]rinted matter is *only* entitled to patentable weight if it is functionally related to the substrate on which the information is present.” Pet. at 81 (emphasis added). Petitioner relies on and misinterprets *In re Marco Guldenaar Holding B.V.*, which actually holds that “claim limitations directed to the content of information and lacking a requisite functional relationship are not entitled to patentable weight.” Pet. at 78 (citing to *In re Marco Guldenaar Holding B.V.*, 911 F.3d 1157, 1161 (Fed. Cir. 2018) (quoting *Praxair*, 890 F.3d at 1032)). However, it is Petitioner’s burden to establish that the claim limitations in question are not entitled to patentable weight. See *FanDuel, Inc. v. Interactive Games LLC*, 966 F.3d 1334, 1341 (Fed. Cir. 2020) (“In an *inter partes* review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ 35 U.S.C. § 316(e), and that burden never shifts to the patentee.”); *In re Lowry*, 32 F.3d 1579, 1584 (Fed. Cir. 1994) (“Even assuming, arguendo, that data objects and data structures are analogous to printed matter ... the burden of establishing the absence of a novel, nonobvious functional relationship rests with the PTO.”).

Like Petitioner’s obviousness assertions, Petitioner’s allegations regarding printed matter are conclusory and lack any meaningful analysis as to the independent

claims.³ Indeed, Petitioner has failed to meet its burden because Petitioner's allegations lack a showing with any particularity that any limitation of the challenged claims is printed matter as a threshold issue. *See* Pet. at 78 ("Because each of the above limitations are defined by the information content, they are patent ineligible printed matter."). For example, Petitioner does not allege which particular claim elements are "matter claimed for what it communicates," much less what is being communicated and to whom. *See In re DiStefano*, 808 F.3d at 848-849.

Additionally, Petitioner does not cite to any case law where claim limitations similar to those at issue here were found to be printed matter. Petitioner relies on *C R Bard* as standing for the proposition that a patent cannot cover certain limitations of the challenged claims. Pet. at 77. But the limitations discussed in *C R Bard* are directed to humans that perform a medical procedure involving physical implants with identifiers physically printed on the physical object not to claim limitations performed by a machine or a computer, or anything close to the substance of the challenged limitations at issue here. 979 F.3d at 1376-77, 1381-82. Nor would such a discussion be relevant in *C R Bard*, because there, unlike here, "the parties agree[d]

³ For purposes of Patent Owner's Preliminary Response, Patent Owner only addresses the limitations of the independent claims.

that the asserted claims include printed matter,” a fact which Petitioner sweeps under the rug. *Id.* at 1381. The other cases Petitioner cites are similarly directed to limitations performed by humans that involve information actually printed on a physical object that convey information to a human. *See Praxair Distrib., Inc.* at 1028-1029 (claims are performed by humans and “generally require supplying a medical provider with a cylinder of nitric oxide gas and providing the medical provider with certain prescribing information relating to the harmful effects of nitric oxide for certain patients”); *In re Marco Guldenaar Holding B.V.*, 911 F.3d 1157, 1161 (claims directed to humans playing a dice game, where markings on dice convey information to a human).

The claim limitations at issue here are not printed matter and do not comprise matter claimed for what it communicates or that merely convey information. For example, claim 1 requires “receiving . . . sensor data captured by a sensor installed on the autonomous vehicle, the sensor data displaying an object on the road,” “providing the sensor data as input to a supervised learning based model, the supervised learning based model configured to receive an input sensor data displaying a particular object on a road and predicting an output statistical summary characterizing a distribution of user responses expected to be received responsive to presenting the sensor data to a plurality of users, the user responses associated with

the particular object,” “executing the trained supervised learning based model to generate a statistical summary data characterizing a distribution of user responses expected to be received responsive to presenting the sensor data captured by the sensor installed on the autonomous vehicle to users,” and “controlling the operation of the autonomous vehicle on the road based on the generated statistical summary data.” Patent Owner could not find any cases that discuss or analyze claim limitations like those at issue here in the printed matter context. If the claim limitations at issue here were printed matter, one would expect a plethora of court orders discussing this issue.

Assuming *arguendo* that the claim limitations are deemed to be printed matter, Petitioner fails to meet its burden that the limitations are not owed any patentable weight. Pet. at 76. Again, Petitioner relies on cases directed to steps performed by a human involving matter actually printed on a physical substrate (e.g., markings on dice and instructions for a health care worker). *Id.* Petitioner then relies on these cases to allege that limitations of the challenged claims “merely inform[] people of the claimed information” without further analysis or explanation as to how this allegation is related to the challenged claims. Pet. 78. This is insufficient and, in any case, not true with respect to the challenged claims.

Indeed, the Federal Circuit has found a functional relationship where the claim requires a human taking a specific medical action based on printed matter comprising instructions related to the medical action because the interrelated claim information creates a functional relationship with a concrete step of discontinuing treatment because of that information. *See Praxair*, 890 F.3d at 1035. Similarly, the claims of the '344 patent interrelate information with concrete steps based on the alleged printed matter information. For example, a model is configured to predict summary statistics, and the autonomous vehicle is controlled based on the prediction. *See* Ex. 1001, claims 1, 10, and 19. Concrete steps such as “predicting . . . summary statistics,” and “controlling the autonomous vehicle” are analogous to the concrete step of “discontinuing treatment.” *See Praxair*, 890 F.3d at 1035; *see also* Ex. 1001, claims 1, 10, and 19. The concrete steps of each challenged claim are interrelated with the alleged printed matter limitations, and the concrete steps are taken based on the alleged printed matter limitations.

In conclusory fashion, Petitioner also alleges that limitations of the challenged claims “merely inform[] people of the claimed information.” This allegation lacks meaningful analysis or explanation, and on its face is simply not true. Pet. at 78. For example, the independent claims recite steps performed by computers. *See, e.g.*, Claim 1 (“A computer-implemented method comprising . . .”).

A proper analysis should “consider whether the printed matter merely informs people of the claimed information, or whether it instead interacts with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process.” *C R Bard*, 979 F.3d at 1381. The challenged claims do not “merely inform” people of the claimed information. Instead, the challenged claims refer to “sensor data,” which is used in other claim limitations for purposes of “controlling the operation of the autonomous vehicle.” *C R Bard*, 979 F.3d at 1381.

Although Petitioner claims the alleged “printed matter limitations do not have any such functional relationship with the ‘substrate,’ which in this case is computer memory” (Pet. at 78), there is no basis for Petitioner’s conclusion that the substrate is simply “computer memory.” Rather, “substrate . . . encompasses the structural elements of the claimed invention.” *C R Bard*, 979 F.3d at 1381. The structural elements of the claimed inventions include elements such as the autonomous vehicle, learning models, computers, memory comprising software instructions, processors, etc. As previously discussed, each of the challenged limitations has a functional relationship with such structural elements. For example, a functional relationship to a substrate has been found when software causes information to be displayed on a computer screen. *See Hafeman v. LG Elecs., Inc.*, No. 6:21-cv-00696-ADA-DTG,

2023 U.S. Dist. LEXIS 66459, at *23 (W.D. Tex. Apr. 17, 2023). This is analogous to the claims at issue here, where software causes, for example, a computer processor to perform one or more of the challenged limitations that ultimately lead to software controlling the autonomous vehicle.

In sum, the challenged claim limitations do not comprise printed matter. Even if they did, the printed matter is still owed patentable weight. Petitioner has failed to meet its burden to prove otherwise.

X. PATENT OWNER'S FINAL COMMENTS

Patent Owner does not concede the legitimacy of any arguments in the Petition that are not specifically addressed herein and expressly reserves the right to rebut any such arguments in its Patent Owner Response if *inter partes* review is instituted. Similarly, Patent Owner also does not concede any underlying contentions in the Petition and reserves the right to rebut them later. Additionally, Patent Owner is not limited to the arguments presented here in this Preliminary Response, but expressly reserves the right to raise further arguments, including claim construction arguments, not presented in this Preliminary Response.

XI. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board decline to institute *inter partes* review of the '344 patent.

Dated: January 8, 2026

By: /C. Austin Ginnings/
C. Austin Ginnings
Registration No. 62,706
NELSON BUMGARDNER
CONROY P.C.
745 McClintock Drive, Suite 340
Burr Ridge, Illinois 60527
Telephone: (708) 675-1583
Email: austin@nelbum.com

Attorney for Patent Owner

CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Preliminary Response complies with the type-volume limits of 37 C.F.R. § 42.24(b)(1) because it contains 10,524 words, excluding the parts of this Patent Owner's Preliminary Response that are exempted by 37 C.F.R. § 42.24(a), according to the word processing system used to prepare this Patent Owner's Preliminary Response.

Dated: January 8, 2026

By: /C. Austin Ginnings/
C. Austin Ginnings
Registration No. 62,706
NELSON BUMGARDNER
CONROY P.C.
745 McClintock Drive, Suite 340
Burr Ridge, Illinois 60527
Telephone: (708) 675-1583
Email: austin@nelbum.com

Attorney for Patent Owner

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Patent Owner's Preliminary Response was served on January 8, 2026, to Lead and Back-up Counsel for Petitioner at the service address provided in Petitioner's Mandatory Notices:

Email: Roger.fulghum@bakerbotts.com
 Mark.speegle@bakerbotts.com
 Ellyar.barazesh@bakerbotts.com
 Lance.goodman@bakerbotts.com
 William.gainers@bakerbotts.com
 afawzy@tesla.com

By: / C. Austin Ginnings/
 C. Austin Ginnings
 Registration No. 62,706
 NELSON BUMGARDNER
 CONROY P.C.
 745 McClintock Drive, Suite 340
 Burr Ridge, Illinois 60527
 Telephone: (708) 675-1583
 Email: austin@nelbum.com

Attorney for Patent Owner