

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,

Petitioner,

v.

PERCEPTIVE AUTOMATA LLC,

Patent Owner.

Case No. IPR2025-01575

Patent No. 11,753,046

PATENT OWNER'S PRELIMINARY RESPONSE

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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 1-19 of U.S. Patent No. 11,753,046 (the “’046 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. The Petition’s allegations are deficient because the references of the proposed grounds do not teach all limitations of the challenged claims. Further, Petitioner failed to identify with particularity the material disclosure of the references where the recited claim language is allegedly met. Petitioner improperly cites to large sections of references, making it impossible to determine the particular evidence Petitioner is relying on in support of its conclusory assertions.

Additionally, Petitioner’s grounds are redundant and Petitioner failed to adequately explain whether and why one ground is preferred over another. Specifically, Ground 1 is a single-reference obviousness assertion based on Cox, Ground 2 is a combination of Cox and Ross, Ground 3 is combination of Cox and Ellenbogen, Ground 4 is a combination of Cox and Munro, and Ground 5 is a

combination of Ellenbogen and Munro. Despite the redundancy, none of the permutations disclose or render obvious the independent claims of the '046 patent.

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 of prevailing on any of the challenged claims.

II. THE '046 PATENT AND THE CHALLENGED CLAIMS

A. Overview of the '046 Patent

The inventions disclosed and claimed in the '046 patent generally relate to systems, computer-implemented methods, and computer readable media associated with controlling autonomous vehicles by “judging the behavior of people near a vehicle in a way that more closely resembles how human drivers would judge the behavior.” Ex. 1001 at 3:58-60. The '046 patent discloses an implementation for achieving this result by obtaining responses to images displaying road scenes to determine a road user’s “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 10:34-53. The images of road users (e.g., motorists, cyclists, pedestrians) in a road scene can be captured by the autonomous vehicle and sent to a remote location for

obtaining responses and training a model. *Id.* at 7:56-8:14. Training dataset(s) comprising summary statistics of the user responses are used to train a learning based model so that the learning based model can predict whether a road user in a new image has a given “state of mind.” *Id.* at 10:34-53. “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 7:32-35. “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 7:32-35.

B. Claim Overview

Independent claims 1, 8, and 15 are reproduced below:

Claim 1	Limitations
1[pre]	A computer-implemented method comprising:
1[a]	storing a plurality of images, each image displaying one or more users;
1[b]	generating training data from the plurality of images, the generating comprising, for each image:

1[b-i]	sending the image to a plurality of human observers, each human observer presented with a request to answer a question about a state of mind of a user in the image,
1[b-ii]	receiving, from each of the plurality of human observers, a response representing a judgment by the human observer of the state of mind of the user in the image,
1[b-iii]	generating summary statistics describing the state of mind of the user in the image based on the received responses from the plurality of human observers, and
1[b-iv]	storing the summary statistics in association with the image as part of the training data;
1[c]	training a model using the training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image; and
1[d]	executing the trained model to predict a state of mind of a user in a new image.
Claim 8	Limitations
8[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 steps comprising:
8[a]	storing a plurality of images, each image displaying one or more users;
8[b]	generating training data from the plurality of images, the generating comprising, for each image:
8[b-i]	sending the image to a plurality of human observers, each human observer presented with a request to answer a question about a state of mind of a user in the image,

8[b-ii]	receiving, from each of the plurality of human observers, a response representing a judgment by the human observer of the state of mind of the user in the image,
8[b-iii]	generating summary statistics describing the state of mind of the user in the image based on the received responses from the plurality of human observers, and
8[b-iv]	storing the summary statistics in association with the image as part of the training data;
8[c]	training a model using the training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image; and
8[d]	executing the trained model to predict a state of mind of a user in a new image.
Claim 15	Limitations
15[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:
15[a]	storing a plurality of images, each image displaying one or more users;
15[b]	generating training data from the plurality of images, the generating comprising, for each image:
15[b-i]	sending the image to a plurality of human observers, each human observer presented with a request to answer a question about a state of mind of a user in the image,

15[b-ii]	receiving, from each of the plurality of human observers, a response representing a judgment by the human observer of the state of mind of the user in the image,
15[b-iii]	generating summary statistics describing the state of mind of the user in the image based on the received responses from the plurality of human observers, and
15[b-iv]	storing the summary statistics in association with the image as part of the training data;
15[c]	training a model using the training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image; and
15[d]	executing the trained model to predict a state of mind of a user in a new image.

III. LEVEL OF ORDINARY SKILL

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 reserves the right to do so if trial is instituted.

IV. CLAIM CONSTRUCTION

The term “user” recited in the challenged claims of the ’046 patent should be construed to mean “road user (e.g., motorist, bicyclist, pedestrian).”

The claims frequently recite images displaying a “user” and the state of mind of a “user.” *See, e.g.*, Ex. 1001 at claim 1 (“each image displaying one or more users,” “a state of mind of a user in the image,” “training a model using the training

data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image,” and “executing the trained model to predict a state of mind of a user in a new image”).

The specification makes clear that the claimed “user” in the context of images and a state of mind is a “road user (e.g., motorist, bicyclist, pedestrian).” *See, e.g., id.* at Abstract (“A computing device receives an image and a video segment of a road scene . . . response data is received, which includes at least one of an action and a likelihood of the action corresponding to another participant in the road scene.”), 3:58-60 (“Systems and methods are described for judging the behavior of people near a vehicle in a way that more closely resembles how human drivers would judge the behavior.”), 3:61-65 (“human observers[] view sample images of people (such as pedestrians) near streets and/or vehicles and indicate or are measured for their understanding of how they believe the people will behave”), 6:41-47 (“the statistics stored in the database 110 cover a large set of images of people on or near roads . . . such as pedestrian, driver, motorcyclist, bicyclist, scooter driver, self-balancing scooter rider, unicyclist, motorized wheelchair user, skateboarder, or others”), 7:18-21 (“the prediction engine 114 uses the trained model from the model training system 112 to predict the actual, ‘real-world’ or ‘live data’ behavior of people on or near a road”), 7:44-50 (“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.”), 9:48-50 (“The judgment that the human observer makes is an evaluation of the state of mind of a road user depicted in the derived stimulus.”), 10:37-41 (“the pictured human road user 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.”), 12:36-38 (“FIG. 9. is a flowchart showing a process of predicting the state of mind of road users using a trained learning algorithm.”), 13:50-54 (“The models described above can be implemented as a real-time module that makes predictions of road user behavior based on input from cameras or other sensors installed on a car 1000.”). There is no disclosure in the ’046 patent about the state of mind of a person that is not a road user. *See id. at passim*. Indeed, the title of the ’046 patent is “System and Method of Predicting Human Interaction with Vehicles,” which refers to a predicting the state of mind of a road user. A POSITA reading the challenged claims in light of the specification of the ’046 patent would clearly understand the claimed “user” to mean

a “road user (e.g., motorist, bicyclist, pedestrian).” Petitioner does not present any constructions for this term or for any other term. *See* Pet. at 13.

Patent Owner submits that the Board need not construe any other 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 other 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.*, No. CBM2012-00003, Paper 8 at 14-15 (P.T.A.B. 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* USPTO, OFFICE PATENT TRIAL

PRACTICE GUIDE, Statutory Requirements (Dec. 12, 2025) (“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 and expert testimony cannot supply the missing claim element

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) (“[O]bviousness 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. Patent of 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).

Further,

Because 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.

See OFFICE PATENT TRIAL PRACTICE GUIDE at § I.G.

B. A 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). 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. *Id.* 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) (emphasis added). Other Board decisions have reached the same result. *See, e.g., Moses Lake Indus., Inc. v. Enthone, Inc.*, No. IPR2014-00246, Paper 6 at 17 (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).

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

For Ground 1, Petitioner contends that Cox renders claims 1-19 obvious. Cox fails to disclose a number of limitations in independent claims 1, 8, and 15, and

Petitioner provides no meaningful explanation about how it would have been obvious to modify or supplement Cox to add those missing limitations. Additionally, Petitioner does not address the *Graham* factors, including the requirement that Petitioner identify the differences between the challenged claims and Cox, and it does not clearly state how Petitioner proposes to overcome these differences. Petitioner has thus failed to meet its burden as to Ground 1.

A. 1[c], 8[c], 15[c] – Petitioner failed to demonstrate that Cox discloses or renders obvious “training a model using the training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image” of the independent claims

Limitation 1[c] recites “training a model using the training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image.”¹ Cox does not disclose this limitation.

As an initial matter, Petitioner fails to allege that Cox discloses or renders obvious the recited term “user” using the proper construction of this term (i.e., “road

¹ 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 14-28, 32-34. Patent Owner’s arguments with respect to claim 1 apply to all challenged claims, including independent claims 8 and 15.

user”). *See* Pet. at 24-27. Indeed, the Petition fails to address the term “user” in any meaningful way. And Cox fails to disclose road users. For at least this reason, Petitioner has failed to meet its burden. *See Harmonic*, 815 F.3d at 1363 (“[T]he Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”); *Liberty Mut. Ins.*, No. CBM2012-00003, Paper 8 at 14-15 (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].”).

Additionally, Petitioner has not shown that Cox discloses or renders obvious “*the model configured to . . . predict summary statistics* describing a state of mind of the user in the input image.” Petitioner begins its analysis with the conclusory statement that “Cox discloses that its model is trained by (1) receiving annotated training images showing emotional states, (2) predicting classifications for the training images using the model, and (3) optimizing the model such that differences between the predicted classifications and annotated training images are minimized.” Pet. at 24-25. None of these assertions allege that Cox discloses “*the model configured to . . . predict summary statistics.*”

Next, Petitioner alleges that “Cox discloses that ‘statistical information [] may be collected and applied to the training of computer-vision systems in accordance with embodiments of the invention,’” and that “[t]he ‘classification systems for any visual category may be trained with deeply annotated images, by following the learning procedure with human-weighted loss.’” Pet. at 25 (citations omitted). Petitioner then alleges that “Cox’s disclosure is consistent with the ’046 Patent, which states that ‘trained’ means ‘that the difference between the summary statistics output by the neural network and the summary statistics calculated from the responses of the human observers in step 506 is minimized,’” and that “[t]his is just like Cox’s training approach, as described below and shown in Figure 4B.” Pet. at 25 (citations omitted). Once again, none of these assertions allege that Cox discloses “*the model configured to . . . predict summary statistics.*”

The remainder of Petitioner’s allegations are similarly deficient. *See* Pet. at 26 (“In Cox, annotation responses and psychometric data from the human annotators are utilized to form ‘a human-weighted loss function’ that ‘includes penalties for misclassification of later presented query objects, as graphically illustrated in graph 430[.]’”) (citations omitted); *id.* (“The magnitude of the penalties notably ‘increases with increasing deviation from the classification data received from the human annotators 160.’”) (citations omitted); *id.* (“These penalties ensure that the trained

model is ‘more consistent with the decisions of the human annotators.’”) (citations omitted); *id.* at 26-27 (“Cox further teaches that the ‘penalties for misclassification may be assigned based at least in part on the psychometric data.’”); *id.* at 27 (“By introducing penalties based on differences from human annotations, Cox optimizes its model to minimize such differences.”). None of these assertions allege that Cox discloses “*the model configured to . . . predict summary statistics.*”

Petitioner ends its analysis with the conclusory statement that “Accordingly, Cox discloses that its model is trained by predicting classifications of some of the received training objects (images) showing emotional states and optimizing the model such that the difference between the predicted classifications and the training data is minimized.” *Id.* at 27. Other than the conclusory opening paragraph and this concluding paragraph, the Petition’s allegations do not even use any derivation of the word “predicting,” much less explain how Cox predicts “summary statistics.” *See id.* at 24-27.

Indeed, Petitioner has wholly failed to allege that Cox discloses or renders obvious “*the model configured to . . . predict summary statistics* describing a state of mind of the user in the input image.” Given that Petitioner does not allege or make any showing with particularity that Cox discloses or renders obvious this limitation, the challenged claims cannot be considered obvious. *See id.*

Petitioner also repeatedly cites to its expert declaration in support of its arguments, but that declaration fares no better than the arguments in the Petition itself. Rather than providing any further explanation, Petitioner's expert simply parrots the language and citations from the Petition. *Compare* Ex. 1003, ¶¶ 81-83 *with* Pet. at 24-27. Petitioner's expert also fails to use any derivation of the word "predicting" other than the conclusory opening and concluding statements. *See* Ex. 1003, ¶¶ 81-83. Thus, the cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight. *See* 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."). This is particularly problematic in cases in which, like here, expert testimony is offered not simply to provide a motivation to combine

prior-art teachings, but rather to supply a limitation missing from the prior art. *See KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (stating that a “factfinder . . . must be cautious of arguments reliant upon *ex post* reasoning”); *Arendi S.A.R.L. v. Apple, Inc.*, 832 F.3d 1355, 1361-62 (Fed. Cir. 2016) (holding that reliance on common sense in an obviousness analysis is “typically invoked to provide a known motivation to combine, not to supply a missing claim limitation”) (emphasis omitted). Although doing so might be permissible when “the limitation in question [is] unusually simple and the technology particularly straightforward” (*id.* at 1362), Petitioner has not alleged that to be the case here, much less provided support for such an allegation. *See* Pet. at 24-27. The Trial Practice Guide makes clear that “expert testimony cannot take the place of disclosure from patents or printed publications” and “is not a substitute for disclosure in a prior art reference itself.” *See* OFFICE PATENT TRIAL PRACTICE GUIDE at § I.G.

Claim limitations 8[c] and 15[c] of independent claims 1 and 15 also require “training a model using the training data, *the model configured to* receive an input image showing *a user* and *predict summary statistics* describing a state of mind of *the user* in the input image.” For the same reasons discussed above with respect to claim limitation 1[c], Petitioner has not met its burden as to claim limitations 8[c] and 15[c].

In sum, Petitioner has not met its burden as to Ground 1. Cox fails to teach, suggest, disclose, or render obvious claim limitations 1[c], 8[c], or 15[c]. Further, Petitioner has wholly failed to provide any type of meaningful analysis as to these claim limitations. *See Harmonic*, 815 F.3d at 1363 (“[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 Communication Technology Holdings Ltd. v. Dataquill Limited*, No. IPR2020-00746, Paper 21 at 22 (Sept. 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., No. IPR2015-00488, Paper 14 at 18 (P.T.A.B. July 24, 2015) (citations omitted). Indeed, as emphasized by the Federal Circuit, “[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). As such, Petitioner has failed to meet its burden as to Ground 1 and the same should be rejected.

B. The Petition does not address the *Graham* factors or articulate a proposed modification or supplement to Cox

As set forth in Section V.B, the Petition’s Ground 1 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 1 is a single-reference obviousness assertion (as opposed to an anticipation theory), Petitioner presumably proposes to modify Cox to arrive at the challenged claims. *See, e.g., Arendi*, 832 F.3d at 1361 (“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 Cox, and it does not specify a manner in which it proposes to modify Cox to invalidate the challenged claims. Without identifying these

differences, a proper obviousness determination cannot be made. *Graham*, 383 U.S. at 17-18.

To the extent Petitioner's Ground 1 obviousness allegations attempt to supplement an alleged missing element in Cox 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 Cox, much less articulate how it proposes to supplement Cox 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* OFFICE PATENT TRIAL PRACTICE GUIDE at § I.G. (“because 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.*, No. CBM2012-00003, Paper 8 at 14-15 (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 1

obviousness case. Because the Petition does not address the *Graham* factors, including a discussion of the shortcomings of Cox and how it proposes to address them, the Board should reject Ground 1.

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

For Ground 2, Petitioner contends that Cox in view of Ross renders claims 1-19 obvious. Cox and Ross fail to disclose a number of limitations in independent claims 1, 8, and 15, and Petitioner provides no meaningful explanation about how it would have been obvious to modify these references to add those missing limitations. As set forth below, Petitioner's allegations are impermissibly vague and do not satisfy Petitioner's threshold burden. Furthermore, the Petition does not address the *Graham* factors, including the requirement that Petitioner identify the differences between the challenged claims and Cox, and it does not clearly state how Petitioner proposes to overcome these differences. Thus, Petitioner has not met its burden as to Ground 2.

A. 1[c], 8[c], 15[c] – Petitioner failed to demonstrate that Cox or Ross disclose or render obvious “training a model using the training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image” of the independent claims

For claim limitations 1[c], 8[c], and 15[c], the entirety of Petitioner's analysis is the conclusory statement below:

Cox and Ross teach element 1[c]. EX1003, ¶138. As combined, the training of Cox’s model would have been performed as discussed in Section X.A.2.h (element 1[c] – Ground 1) except the training data includes training images and annotations with respect to actions by a person in images reflecting possible intents of the person, and Cox’s model is trained on such training data as discussed in Section X.A.2.h (element 1[c] – Ground 1). *See* Sections X.B.2, X.B.3.b, X.B.3.c, X.A.2.h.

See Pet. at 42-43. This conclusory statement wholly fails to explain how the claim elements are disclosed or rendered obvious by Cox or Ross. Petitioner’s string citations are directed to Ground 1, other claim limitations of Ground 2, and its motivation-to-combine analysis of Ground 2. 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.*, No. IPR2019-00078, Paper 7 at 15 (P.T.A.B. May 1, 2019).

For at least these reasons, Ground 2 should be denied. *See Harmonic*, 815 F.3d at 1363 (“[T]he Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”); *SAS Inst.*, 138 S. Ct. at 1355 (“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 Communication Technology Holdings*, No. IPR2020-00746, Paper 21 at 22 (“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*, No. IPR2015-00488, Paper 14 at 18 (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.*, 821 F.3d at 1369.

As stated above, in its conclusory allegations for this limitation, Petitioner refers back to its Ground 1 analysis of limitations 1[c], 8[c], and 15[c]. *See* Pet. at

42-43, 45. For the same reasons discussed in Section VI herein, Petitioner has failed to meet its burden as to Ground 2.

Finally, Petitioner's analysis of limitations 1[c], 8[c], and 15[c] fails to address the *Graham* factors. In particular, Petitioner did not identify the differences between the claim limitations and the disclosure of Cox. *See* Pet. at 42-43, 45. Petitioner necessarily acknowledges that some claimed elements are lacking from Cox, or else it would not be relying on Ross. However, Petitioner fails to provide any explanation as to the deficiencies in Cox that Ross would allegedly cure. Without identifying these differences, a proper obviousness determination cannot be made. *Graham*, 383 U.S. at 17-18. Petitioner's wholly incomplete analysis in this regard is even more deficient than the faulty analysis in *Eizo* and warrants denial. *See Eizo*, No. IPR2014-00358, Paper 11 at 29-30. For at least these additional reasons, Petitioner has not shown a reasonable likelihood of prevailing on Ground 2.

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

For Ground 3, Petitioner contends that Cox in view of Ellenbogen renders obvious dependent claims 5, 12, and 19. *See* Pet. at 46-49. Petitioner makes no showing as to how the Cox-Ellenbogen combination renders obvious the

independent claims from which claims 5, 12, and 19 depend. *See* Pet. at 46-49. For at least these reasons, Ground 3 should be denied.

Notably, Ground 3 does not refer back to Ground 1. However, assuming *arguendo* that Petitioner’s Ground 3 allegations rely on Petitioner’s Ground 1 allegations with respect to the independent claims from which claims 5, 12, and 19 depend, Ground 3 should be denied for the same reasons stated in Section VI as to Ground 1.

IX. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 4

For Ground 4, Petitioner contends that Cox in view of Munro renders claims 1-19 obvious. Cox and Munro fail to disclose a number of limitations in independent claims 1, 8, and 15, and Petitioner provides no meaningful explanation about how it would have been obvious to modify these references to add those missing limitations. As set forth below, Petitioner’s allegations are impermissibly vague and do not satisfy Petitioner’s threshold burden. Furthermore, the Petition does not address the *Graham* factors, including the requirement that Petitioner identify the differences between the challenged claims and Cox, and it does not clearly state how Petitioner proposes to overcome these differences. Thus, Petitioner has not met its burden as to Ground 4.

A. 1[c], 8[c], 15[c] – Petitioner failed to demonstrate that Cox or Munro disclose or render obvious “training a model using the

training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image” of the independent claims

For claim limitations 1[c], 8[c], and 15[c], the entirety of Petitioner’s analysis is the conclusory statement below:

Cox and Munro teach element 1[c]. EX1003, ¶172. As combined, the training of Cox’s model would have been performed as discussed in Section X.A.2.h (element 1[c]) except the training data includes the generated summary statistics as taught by Munro, and Cox’s model is trained on such training data in the same manner discussed in Section X.A.2.h (element 1[c]). *See* Sections X.A.2.h (element 1[c]), X.D.3.b (element 1[b-iii]), X.D.3.c.

See Pet. at 54. This conclusory statement wholly fails to explain how the claim elements are disclosed or rendered obvious by Cox or Munro. Petitioner’s string citations are directed to Ground 1, other claim limitations of Ground 4, and its motivation-to-combine analysis of Ground 4. 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*, No. IPR2019-00078, Paper 7 at 15.

For at least these reasons, Ground 4 should be denied. *See Harmonic*, 815 F.3d at 1363 (“[T]he Petitioner has the burden from the onset to show with particularity

why the patent it challenges is unpatentable.”); *SAS Inst.*, 138 S. Ct. at 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 Communication Technology Holdings*, No. IPR2020-00746, Paper 21 at 22 (“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*, No. IPR2015-00488, Paper 14 at 18 (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.*, 821 F.3d at 1369.

As stated above, in its conclusory allegations for this limitation, Petitioner refers back to its Ground 1 analysis of limitations 1[c], 8[c], and 15[c]. *See* Pet. at 54. For the same reasons discussed in Section VI, Petitioner has failed to meet its burden as to Ground 4.

Furthermore, Petitioner's analysis of limitations 1[c], 8[c], and 15[c] fails to address the *Graham* factors. In particular, Petitioner did not identify the differences between the claim limitations and the disclosure of Cox. *See* Pet. at 54. Petitioner necessarily acknowledges that some claimed elements are lacking from Cox, or else it would not be relying on Munro. However, Petitioner fails to provide any explanation as to the deficiencies in Cox that Munro would allegedly cure. Without identifying these differences, a proper obviousness determination cannot be made. *Graham*, 383 U.S. at 17-18. Petitioner's wholly incomplete analysis in this regard is even more deficient than the faulty analysis in *Eizo* and warrants denial. *See Eizo*, No. IPR2014-00358, Paper 11 at 29-30. For at least these additional reasons, Petitioner has not shown a reasonable likelihood of prevailing on Ground 4.

X. THE PETITION DOES NOT DEMONSTRATE THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER GROUND 5

For Ground 5, Petitioner contends that Ellenbogen in view of Munro renders claims 1-19 obvious. Ellenbogen and Munro fail to disclose a number of limitations of independent claims 1, 8, and 15, and Petitioner provides no meaningful

explanation about how it would have been obvious to modify these references to add those missing limitations. As set forth below, Petitioner’s allegations are impermissibly vague and do not satisfy Petitioner’s threshold burden. Furthermore, the Petition does not address the *Graham* factors, including the requirement that Petitioner identify the differences between the challenged claims and Ellenbogen, and it does not clearly state how Petitioner proposes to overcome these differences. Thus, the Board should deny institution as to Ground 5.

A. 1[c], 8[c], 15[c] – Petitioner failed to demonstrate that Ellenbogen or Munro disclose or render obvious “the model configured to . . . predict summary statistics describing a state of mind of the user in the input image” of the independent claims

Limitation 1[c] of independent claim 1 recites “training a model using the training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image.”

As to this limitation, Petitioner alleges that the claimed “user” is “a person exhibiting a certain behavior or activity.” *See* Pet. at 69. Petitioner makes no attempt to explain why a “person exhibiting a certain behavior or activity” would be considered a “user.” *See id.* Moreover, Petitioner makes no allegation that the Ellenbogen-Munro combination discloses or renders obvious a “road user,” which is the proper construction of “user.” *See* Section IV. For at least this reason, Petitioner has failed to meet its burden as to Ground 5. *See Harmonic*, 815 F.3d at

1363 (“[T]he Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”).

Furthermore, Petitioner makes no attempt to identify what exactly in the Ellenbogen-Munro combination it is alleging to be the claimed “model.” *See* Pet. at 67-70. For at least this additional reason, Petitioner has failed to meet its burden as to Ground 5. *See Harmonic*, 815 F.3d at 1363.

Additionally, Petitioner has not and cannot show that the Ellenbogen-Munro combination discloses or renders obvious “*the model configured to . . . predict summary statistics describing a state of mind of the user in the input image*” of limitation 1[c]. As to the predicting limitation, Petitioner relies on Ellenbogen’s “object classifier” that “can generate a score from 0.0 to 1.0 related to the confidence that the object is not present (0.0) or present (1.0). The classification can be binary or multiclass.” *See* Pet. at 68. But Petitioner does not allege that Ellenbogen’s “object classifier” is “*the model.*” *See* Pet. at 67-70. For at least this additional reason, Petitioner has failed to meet its burden as to Ground 5. *See Harmonic*, 815 F.3d at 1363.

Moreover, Petitioner has not and cannot show that Ellenbogen’s “object classifier” discloses, teaches, or suggests “*predict[ing] summary statistics describing a state of mind of the user in the input image*” of this limitation. *See* Pet.

at 68-69. Indeed, Ellenbogen’s “object classifier” determines “that the object is not present [] or present [],” but it does not “*predict summary statistics describing a state of mind of the user in the input image.*” See Ex. 1004 at ¶ [0166]. Notably, the sentence that immediately follows the cited disclosure of Ellenbogen’s “object classifier” states that “[t]he classification can be binary or multiclass.” *Id.* Based on this disclosure of Ellenbogen, Petitioner leaps to the conclusory assertion that “a POSITA would have understood that a multiclass prediction utilizing confidence scores from 0.0 to 1.0 summarizes the various possible classifications and likelihoods for behavior or activity in the image (*summary statistics describing a state of mind of the user in the input image*).” Pet. at 68-69. Petitioner makes no attempt to explain why a POSITA would have understood Ellenbogen’s “object classifier” that can make “binary or multiclass” classifications “that the object is not present [] or present []” to somehow mean that Ellenbogen’s “object classifier” “summarizes the various possible classifications and likelihoods for behavior or activity in the image.” See Pet. at 68-70; see also Ex. 1004 at ¶ [0166]. 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*, No. IPR2019-00078, Paper 7 at 15.

For at least these additional reasons, Ground 5 should be denied. *See Harmonic*, 815 F.3d at 1363 (“[T]he Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”); *SAS Inst.*, 138 S. Ct. at 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 Communication Technology Holdings*, No. IPR2020-00746, Paper 21 at 22 (“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*, No. IPR2015-00488, Paper 14 at 18 (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.*, 821 F.3d at 1369.

Petitioner’s expert declaration likewise fails to address these issues. Instead, Petitioner’s expert largely parrots the language of the Petition without adding further evidence or discussion. *Compare* Ex. 1003 at ¶¶ 200-204 *with* Pet. at 67-70. Thus, the cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight. *See* 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*, 225 F.3d at 1311 (“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*, 776 F.2d at 294 (Fed. Cir. 1985)); *Carella*, 804 F.2d at 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.”). This is particularly problematic in cases in which, like here, expert testimony is offered not simply to provide a motivation to combine prior-art teachings, but rather to supply a limitation missing from the prior art. *See KSR*, 550 U.S. at 421 (stating that a “factfinder . . . must be cautious of arguments reliant upon *ex post* reasoning”);

Arendi, 832 F.3d at 1361-62 (Fed. Cir. 2016) (holding that reliance on common sense in an obviousness analysis is “typically invoked to provide a known motivation to combine, not to supply a missing claim limitation”) (emphasis omitted). Although doing so might be permissible when “the limitation in question [is] unusually simple and the technology particularly straightforward” (*id.* at 1362), Petitioner has not alleged that to be the case here, much less provided support for such an allegation. *See* Pet. at 67-70. Moreover, the Trial Practice Guide makes clear that “expert testimony cannot take the place of disclosure from patents or printed publications” and “is not a substitute for disclosure in a prior art reference itself.” *See* OFFICE PATENT TRIAL PRACTICE GUIDE at § I.G.

Indeed, Petitioner has wholly failed to allege that the Ellenbogen-Munro combination discloses or renders obvious “*the model configured to . . . predict summary statistics describing a state of mind of the user in the input image.*” Given that Petitioner does not allege or make any showing with particularity that the Ellenbogen-Munro combination discloses or renders obvious this limitation, the challenged claims cannot be considered obvious. *See id.* If a single element of the claim is absent from the prior art, the claim cannot be considered obvious. *See CFMT*, 349 F.3d at 1342.

Claim limitations 8[c] and 15[c] of independent claims 1 and 15 also require “training a model using the training data, *the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user* in the input image.” For the same reasons discussed above with respect to claim limitation 1[c], Petitioner has not met its burden as to claim limitations 8[c] and 15[c].

Finally, Petitioner’s analysis of limitations 1[c], 8[c], and 15[c] fails to address the *Graham* factors. In particular, Petitioner did not attempt to identify the differences between the claim limitations and the disclosure of Ellenbogen. *See* Pet. at 67-70. Petitioner necessarily acknowledges that some claimed elements are lacking from Ellenbogen, or else it would not be relying on Munro. However, Petitioner fails to provide any explanation as to the deficiencies in Ellenbogen that Munro would allegedly cure. Without identifying these differences, a proper obviousness determination cannot be made. *Graham*, 383 U.S. at 17-18. Petitioner’s wholly incomplete analysis in this regard is even more deficient than the faulty analysis in *Eizo* and warrants denial. *See Eizo*, No. IPR2014-00358, Paper 11 at 29-30. For at least these additional reasons, Petitioner has not shown a reasonable likelihood of prevailing on Ground 5.

XI. 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 78 (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.² 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 element is “matter claimed for what it communicates,” much less what is being communicated and to whom. *Id.*; *see In re DiStefano*, 808 F.3d at 848-49.

Additionally, Petitioner does not cite to any case law in which claim limitations similar to those at issue here were found to be printed matter. Petitioner relies on *CR Bard* as standing for the proposition that a patent cannot cover certain limitations of the challenged claims. Pet. at 78. But the limitations discussed in *CR 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

² For purposes of Patent Owner’s Preliminary Response, Patent Owner only addresses the limitations of the independent claims.

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] 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*, 890 F.3d at 1028-29 (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 at 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 that merely conveys information. For example, the claims require at least one computer to perform or be configured to perform the steps of “storing a plurality of images, each image displaying one or more users,” “generating training data from the plurality of images, the generating comprising, for each image,” “sending the image to a plurality of human observers, each human observer presented with a request to answer a question about a state of

mind of a user in the image,” “receiving, from each of the plurality of human observers, a response representing a judgment by the human observer of the state of mind of the user in the image,” “generating summary statistics describing the state of mind of the user in the image based on the received responses from the plurality of human observers,” “storing the summary statistics in association with the image as part of the training data,” “training a model using the training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image,” and “executing the trained model to predict a state of mind of a user in a new image.” 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 77-78. Again, Petitioner only 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. *Id.* 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 '046 patent interrelate information with concrete steps based on the alleged printed matter information. For example, training data is generated based on receiving a plurality of responses based on a state of mind of a user in an image, a model is trained using the training data, and the trained model predicts a state of mind of a user in a new image. *See Ex. 1001*, claims 1, 8, and 15. Concrete steps such as “generating training data,” “training . . . a model,” and “executing the trained model . . .” are analogous to the concrete step of “discontinuing treatment.” *See Praxair*, 890 F.3d at 1035; *see also Ex. 1001*, claims 1, 8, and 15. 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.

Petitioner conclusorily alleges that limitations of the challenged claims “merely inform[] people of the claimed information,” without further analysis or

explanation. Pet. at 78. For example, what “people” are merely being informed, when the independent claims recite steps performed by computers. The Federal Circuit has provided 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*, 979 F.3d at 1381. The challenged claims do not “merely inform” people of the claimed information. Instead, while the challenged claims refer to certain types of data, they recite numerous limitations that interact to cause specific actions in a claimed process, as previously discussed. For example, claim 1 of the ’046 patent recites:

storing a plurality of images, each image displaying one or more users;

generating training data from the plurality of images, the generating comprising, for each image:

sending the image to a plurality of human observers, each human observer presented with a request to answer a question about a state of mind of a user in the image,

receiving, from each of the plurality of human observers, a response representing a judgment by the human observer of the state of mind of the user in the image,

generating summary statistics describing the state of mind of the user in the image based on the received responses from the plurality of human observers, and

storing the summary statistics in association with the image as part of the training data;

training a model using the training data, the model configured to receive an input image showing a user and predict summary statistics describing a state of mind of the user in the input image; and

executing the trained model to predict a state of mind of a user in a new image.

Ex. 1001, claim 1. The limitations also “create a new functionality in a claimed device” regarding the claimed “model” that becomes a “trained model” based on the limitations. *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 trained 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.*, Civil Action 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, in which software causes, for example, a computer processor to perform one or more of the challenged limitations that ultimately lead to software predicting a state of mind of a user.

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 hold otherwise.

XII. 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.

XIII. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board decline to institute *inter partes* review of the '046 patent.

Dated: January 8, 2026

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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 10,649 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.

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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:

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