

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner

v.

AUTONOMOUS DEVICES, INC.,
Patent Owner

Case IPR2023-01172
Patent 11,055,583

PETITIONER'S NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141(c), 142, and 319, 37 C.F.R. § 90.2(a), notice is hereby given that Petitioner Tesla, Inc. (“Tesla”) appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision, entered January 3, 2025 (Paper 41) (“Final Written Decision”) (attached), in Case No. IPR2023-01172 by the Patent Trial and Appeal Board (“the Board”), and from all underlying orders, decisions, rulings, and opinions related thereto and included therein that are adverse to Tesla. This appeal is timely under 35 U.S.C. § 142, 37 C.F.R. § 90.3, Federal Rule of Appellate Procedure 15(a)(1), and Federal Circuit Rule 15(a)(1).

For the limited purpose of providing the Director with the information required by 37 C.F.R. § 90.2(a)(3)(ii) and Federal Rule of Appellate Procedure 15(a)(2)(C), the issues on appeal may include, but are not limited to:

1. The Board’s judgment that Petitioner has not established by a preponderance of the evidence that claim 15 of U.S. Patent No. 11,055,583 (the “’583 patent”) is unpatentable, including any underlying questions of law or fact, including at least the Board’s analysis and findings regarding anticipation based on U.S. Patent No. 9,604,359 (Grotmol).
2. The Board’s construction of claim terms of the ’583 patent, including “the modifying limitation” and “the determining limitation,” the

Board's interpretation of those constructions, and the Board's application of those constructions to the prior art.

3. The Board's failure to consider evidence of record fully and properly; the Board's findings that conflict with the evidence of record and/or are not supported by substantial evidence; and the Board's reliance on conclusory and insufficient expert testimony.
4. Any other Board and/or Director finding, determination, decision, ruling, judgment, or order on any issue decided adversely to Tesla.

Petitioner further reserves the right to challenge any finding or determination supporting or relating to the issues above and reserves the right to address any issues that may arise on appeal or that Patent Owner may raise on appeal.

Pursuant to 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a)(1), this notice is being filed with the Director of the U.S. Patent and Trademark Office, and a copy is also being filed with the Board. In addition, pursuant to Federal Circuit Rule 15(a)(1) and 37 C.F.R. § 90.2(a)(2), Petitioner also is electronically filing this notice with the Clerk of the U.S. Court of Appeals for the Federal Circuit, and paying the fee set forth in Federal Circuit Rule 52.

Respectfully submitted,

Date: March 7, 2025

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4) and 42.205(b), the undersigned certifies that on March 7, 2025, a complete and entire copy of this Petitioner's Notice of Appeal was provided via email to the Patent Owner by serving the correspondence address of record as follows:

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Pursuant to 37 C.F.R. §§ 90.2(a)(1), I hereby certify that in addition to being filed electronically through the Board's P-TACTS System, this Petitioner's Notice of Appeal is being provided to the Director of the USPTO on March 7, 2025, by electronically filing to the email address as follows:

Director of the United States Patent and Trademark Office
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I hereby certify that on March 7, 2025, a true and correct a copy of the foregoing Petitioner's Notice of Appeal, along with a copy of the Final Written

Decision, was filed electronically with the Clerk's Office of the United States

Court of Appeals for the Federal Circuit, at the following address:

United States Court of Appeals for the Federal Circuit
717 Madison Place, N.W., Suite 401
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Date: March 7, 2025

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
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v.

AUTONOMOUS DEVICES, LLC,
Patent Owner.

IPR2023-01172
Patent 11,055,583 B1

Before BARBARA A. PARVIS, ROBERT J. WEINSCHENK, and
RUSSELL E. CASS, *Administrative Patent Judges*.

WEINSCHENK, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. *Background and Summary*

Tesla, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–9, 11–24, 26, 28, 29, and 31–34 (“the challenged claims”) of U.S. Patent No. 11,055,583 B1 (Ex. 1001, “the ’583 patent”). Autonomous Devices, LLC (“Patent Owner”) filed a Preliminary Response (Paper 11, “Prelim. Resp.”) to the Petition. We instituted an *inter partes* review of the challenged claims on January 8, 2024. Paper 21 (“Dec. on Inst.”), 17. After institution, Patent Owner filed a Response (Paper 28, “PO Resp.”) to the Petition, Petitioner filed a Reply (Paper 33, “Pet. Reply”) to the Response, and Patent Owner filed a Sur-reply (Paper 35, “PO Sur-reply”) to the Reply. We held an oral hearing on October 3, 2024, and a transcript of the hearing is included in the record. Paper 40 (“Tr.”).

For the reasons set forth below, Petitioner has shown by a preponderance of the evidence that claims 1–9, 11–14, 16–24, 26, 28, 29, and 31–34 of the ’583 patent are unpatentable. Petitioner has not shown by a preponderance of the evidence that claim 15 of the ’583 patent is unpatentable.

B. *Real Parties in Interest*

The parties identify themselves as the only real parties in interest. Pet. 1; Paper 5, 1.

C. *Related Matters*

The parties indicate that the ’583 patent is the subject of the following district court case: *Autonomous Devices, LLC v. Tesla, Inc.*, No. 22-cv-1466 (D. Del.) (“District Court Litigation”). Pet. 1; Paper 5, 1. The parties

indicate that the '583 patent is the subject of another petition for *inter partes* review in IPR2023-01173. Paper 1, 1; Paper 5, 2. The parties also indicate that other patents in the District Court Litigation are the subject of petitions for *inter partes* review in IPR2023-01054, IPR2023-01055, IPR2023-01169, IPR2023-01170, and IPR2023-001171. Pet. 1; Paper 5, 1–2.

D. The '583 Patent

The '583 patent relates to “machine learning for computing enabled systems and/or devices.” Ex. 1001, code (57). The '583 patent states that “[a] machine learning solution is needed for computing enabled systems and/or devices to be less dependent on or fully independent from user input.” *Id.* at 1:37–39. The '583 patent describes a system for “learning and/or using visual surrounding for autonomous device operation” comprising “learning one or more digital pictures of a device’s surrounding along with correlated instruction sets for operating the device, storing this knowledge in a knowledgebase (i.e. neural network, graph, sequences, etc.), and autonomously operating a device.” *Id.* at 59:10–18.

E. Illustrative Claim

Of the challenged claims, claims 1, 33, and 34 are independent. Claim 1 is reproduced below.

1. A system comprising:
 - one or more processors; and
 - one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:
 - receiving or generating a first one or more digital pictures, wherein the first one or more digital pictures depict at least a portion of a first device’s surrounding;

receiving or generating a first one or more instruction sets for operating the first device; and

learning the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device.

Ex. 1001, 160:41–54.

F. Evidence

Petitioner submits the following evidence:

Evidence	Exhibit No.
Declaration of Jason Janet (“Janet Declaration”)	1003
Grotmol, US 9,604,359 B1, issued Mar. 28, 2017 (“Grotmol”)	1005
Supplemental Declaration of Dr. Jason Janet (“Janet Supplemental Declaration”)	1010

Patent Owner submits the Declaration of Dr. Eli Saber, Ph.D.

Ex. 2007 (“Saber Declaration”).

G. Asserted Ground

Petitioner asserts that the challenged claims are unpatentable on the following ground:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–9, 11–24, 26, 28, 29, 31–34	102 ¹	Grotmol

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 102. Based on the effective filing date of the ’583 patent, we apply the AIA version of § 102.

II. ANALYSIS

A. Legal Standards

A claim is anticipated if each limitation of the claim is disclosed in a single prior art reference arranged as in the claim. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008).

B. Level of Ordinary Skill in the Art

Petitioner argues that a person of ordinary skill in the art would have had “(1) a bachelor’s degree in electrical engineering, computer engineering, computer science, systems engineering, or equivalent course work with two to three years of work experience in computer vision, image/video processing, and/or machine learning; or (2) a master’s degree in electrical engineering, computer engineering, computer science, systems engineering, or equivalent course work with a focus in computer vision, image/video processing, and/or machine learning.” Pet. 3–4 (citing Ex. 1003 ¶ 41). Petitioner’s description of the level of ordinary skill in the art is supported by the testimony of Petitioner’s declarant, Dr. Jason Janet. Ex. 1003 ¶ 41. Patent Owner “adopts” Petitioner’s description of the level of ordinary skill in the art. PO Resp. 4–5. We also adopt Petitioner’s description for the purposes of this Decision.

C. Claim Construction

In an *inter partes* review proceeding, a patent claim is construed using the same standard used in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of the claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b).

1. Connection

Patent Owner proposes construing the term “connection” in claim 23 to mean a “relationship that includes a link.” PO Resp. 7. Patent Owner argues that the written description of the ’583 patent supports its interpretation. *Id.* at 7–11 (citing Ex. 1001, 15:12–14, 95:65–96:59, 98:31–37, 144:1–51, Figs. 16, 17A); PO Sur-reply 19–21. In particular, Patent Owner argues that the ’583 patent’s Figure 16 shows connections between nodes that “may include or be associated with a value such as a symbolic label or numeric attribute (i.e. weight, cost, capacity, length, etc.).” PO Resp. 8–9 (citing Ex. 1001, 96:19–22, Fig. 16). Patent Owner also argues that the ’583 patent’s Figure 17A shows connections between knowledge cells that “may include or be associated with occurrence count, weight, and/or other parameter or data.” *Id.* at 9–10 (citing Ex. 1001, 98:31–37, Fig. 17A).

Petitioner disagrees with Patent Owner’s proposed construction. Pet. Reply 23–24. Specifically, Petitioner argues that the ’583 patent’s Figures 16 and 17A “are merely example embodiments,” and the ’583 patent “never even uses the term ‘link’ in connection with these examples.” *Id.* at 23. According to Petitioner, “[t]he meaning that most closely aligns with the breadth of this term in the specification is ‘an association or a relationship’—regardless of the presence of a link.” *Id.* at 23–24 (citing Ex. 1001, 67:21–31; Ex. 1002 ¶ 307; Ex. 1010 ¶¶ 52–57; Ex. 1016, 12:12–36:5; Ex. 2012, 399–400; Ex. 2013, 481).

The parties appear to agree that the term “connection” refers to a relationship, but dispute whether it includes a link. PO Resp. 7; Pet. Reply 23. We need not resolve this claim construction issue in order to

resolve the parties' disputes about the asserted ground of unpatentability. Specifically, as discussed below, even if we assume for the purposes of this Decision that the term "connection" means a "relationship that includes a link," the asserted prior art still discloses the disputed claim limitation. *See* Section II.D.23.

2. *Determining the modified the first one or more instruction sets*

Claim 15 recites "modifying: the first one or more instruction sets for operating the first device, or a copy of the first one or more instruction sets for operating the first device" ("the modifying limitation"). Ex. 1001, 162:65–163:2. Claim 15 also recites "determining the modified the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures, or determining the modified the copy of the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures" ("the determining limitation"). *Id.* at 163:2–15.

Petitioner argues that "[n]either the plain language of claim 15 nor the '583 [patent] specification require the instruction sets to be modified before a determination based on at least a partial match between the new and stored digital pictures." Pet. Reply 13. According to Petitioner, "[t]he specification instead makes clear that instruction sets can be modified even as part of this determination and after a match to a stored digital picture is determined." *Id.* (citing Ex. 1001, 11:59–61, 68:45–47, 89:22–62, 160:21–39). In contrast, Patent Owner argues that "the instruction set must be modified before the determining of the modified instruction set." PO Sur-reply 13 (emphasis omitted). Patent Owner points out that "claim 15

specifically recites ‘modifying: the first one or more instruction sets . . .’ and ‘determining *the modified* the first one or more instruction sets.’” *Id.*

We agree with Patent Owner that claim 15 requires modifying the first instruction set *before* determining the modified first instruction set based on an at least partial match between the new digital picture and the first digital picture. Claim 15 recites “modifying: the first one or more instruction sets” and “determining *the modified* the first one or more instruction sets . . . *based on the at least partial match* between the new one or more digital pictures and the first one or more digital pictures.” Ex. 1001, 162:65–163:15 (emphasis added). The phrase “the modified . . . instruction sets” in the determining limitation indicates an order because it refers back to the instruction sets modified in the modifying limitation. *Id.* Further, the phrase “based on the at least partial match” indicates that a partial match between the new picture and the first picture returns the modified first instruction set. *Id.* In order for a partial match to return the modified first instruction set, it is logical that the first instruction set previously was modified and correlated to the first picture. *Id.* Thus, claim 15 indicates that the modifying limitation is performed *before* the determining limitation. *See Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003) (“First, we look to the claim language to determine if, as a matter of logic or grammar, [the recited steps] must be performed in the order written.”).

Petitioner’s citations to certain portions of the written description of the ’583 patent are unavailing. *See* Pet. Reply 13 (citing Ex. 1001, 11:59–61, 68:45–47, 89:22–62, 160:21–39). For example, Petitioner cites to an embodiment in which a device determines an anticipatory instruction set based on an at least partial match between an incoming picture and a stored

picture and then provides the anticipatory instruction set to a user for modification. Ex. 1001, 89:22–62. In other words, the cited embodiment first determines an instruction set based on a partial match and then modifies the determined instruction set. *Id.* The order described by this particular embodiment, though, does not overcome the clear import of the claim language discussed above.² See *SIMO Holdings Inc. v. Hong Kong uCloudlink Network Tech. Ltd.*, 983 F.3d 1367, 1379 (Fed. Cir. 2021) (“[a]lthough reluctant to exclude an embodiment, this court must not allow the disclosed embodiment to ‘outweigh the language of the claim’”).

Petitioner also cites to a portion of the ’583 patent that describes “modifying one or more instruction sets at a source code write time, a compile time, an interpretation time, a translation time, a linking time, a loading time, or a runtime.” Ex. 1001, 11:56–61. Petitioner does not explain specifically how this portion of the ’583 patent supports its interpretation of claim 15. See Pet. Reply 12–15. To the extent Petitioner relies on the mention of “runtime” as evidence that the modifying limitation is performed after (or at the same time as) the determining limitation, we disagree. The cited portion of the ’583 patent simply mentions modifying an instruction set at runtime. Ex. 1001, 11:56–61. The cited portion does not indicate when the modification is performed relative to the determining limitation of claim 15. See *id.*

² In contrast, claim 14 includes language that covers the embodiment cited by Petitioner in which a device first determines an instruction set based on a partial match and then modifies the determined instruction set. Ex. 1001, 162:53–56 (“wherein the first one or more instruction sets . . . are modified and applied to the second device”).

For the foregoing reasons, we agree with Patent Owner that claim 15 requires modifying the first instruction set *before* determining the modified first instruction set based on an at least partial match between the new digital picture and the first digital picture.

3. Means-plus-function limitations

Petitioner contends that the corresponding structure for the “means for receiving or generating a first one or more digital pictures,” the “means for receiving or generating a first one or more instruction sets for operating the first device,” and the “means for learning the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device” in claim 34 is “one or more processor circuits.” Pet. 4 (citing Ex. 1001, 16:8–60). Patent Owner does not dispute Petitioner’s proposed construction. PO Resp. 11. We adopt Petitioner’s proposed construction for purposes of this Decision.

D. Anticipation of Claims 1–9, 11–24, 26, 28, 29, and 31–34 by Grotmol

Petitioner argues that claims 1–9, 11–24, 26, 28, 29, and 31–34 are anticipated by Grotmol. Pet. 8–65. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that claims 1–9, 11–14, 16–24, 26, 28, 29, and 31–34 are anticipated by Grotmol, but Petitioner has not shown by a preponderance of the evidence that claim 15 is anticipated by Grotmol.

1. Overview of Grotmol

Grotmol relates to “[a]n apparatus and methods for training and/or operating a robotic device to follow a trajectory.” Ex. 1005, code (57). Grotmol’s “robotic vehicle may utilize a camera and store[] the sequence of images of a visual scene seen when following a trajectory during training in

an ordered buffer.” *Id.* Grotmol’s robotic vehicle may also store “[m]otor commands associated with a given image.” *Id.* “During autonomous operation, an acquired image may be compared with one or more images from the training buffer in order to determine the most likely match.” *Id.*

2. *Claim 1*

Claim 1 recites “one or more processors.” Ex. 1001, 160:42. Grotmol discloses a processor. Pet. 9–10; Ex. 1005, 3:27–30, 8:5–15, Fig. 7. Patent Owner does not dispute that Grotmol discloses this limitation of claim 1.

Claim 1 recites “one or more non-transitory machine readable media storing machine readable code . . . executed by the one or more processors.” Ex. 1001, 160:43–46. Grotmol discloses a non-transitory computer-readable storage medium having instructions executed by the processor. Pet. 10; Ex. 1005, 4:13–17, 33:14–30, 49:4–50:13. Patent Owner does not dispute that Grotmol discloses this limitation of claim 1.

Claim 1 recites “receiving or generating a first one or more digital pictures, wherein the first one or more digital pictures depict at least a portion of a first device’s surrounding.” Ex. 1001, 160:47–49. Grotmol discloses receiving a first image of a first robot’s visual scene when following a trajectory. Pet. 10–11; Ex. 1005, code (57), 3:27–39, 8:57–9:3, 10:16–22, 38:28–60, 39:13–22, Fig. 20A. Patent Owner does not dispute that Grotmol discloses this limitation of claim 1.

Claim 1 recites “receiving or generating a first one or more instruction sets for operating the first device.” Ex. 1001, 160:50–51. Grotmol discloses receiving a first motor command for causing the first robot to execute an action. Pet. 11–12; Ex. 1005, code (57), 3:27–39, 33:14–30, 39:17–19.

Patent Owner does not dispute that Grotmol discloses this limitation of claim 1.

Claim 1 recites “learning the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device.” Ex. 1001, 160:52–54. Grotmol discloses correlating the first image with the first motor command in a training buffer. Pet. 12–14; Ex. 1005, code (57), 3:27–39, 23:4–29, 24:17–20, 24:57–61, 33:14–30, 33:59–62, 34:50–55, 39:17–19, 43:6–9. Patent Owner does not dispute that Grotmol discloses this limitation of claim 1.

3. Claim 2

Claim 2 depends from claim 1, and recites “wherein the receiving the first one or more digital pictures includes receiving the first one or more digital pictures from a picture capturing apparatus.” Ex. 1001, 160:55–57. Grotmol discloses receiving the first image from a camera. Pet. 15; Ex. 1005, code (57), 10:16–22, 38:28–60. Patent Owner does not dispute that Grotmol discloses this limitation of claim 2.

Claim 2 also recites “wherein the receiving the first one or more instruction sets for operating the first device includes receiving the first one or more instruction sets for operating the first device from: an application for operating the first device, a system for operating the first device, one or more microcontrollers, another one or more processors, or one or more actuators.” Ex. 1001, 160:58–63. Grotmol discloses receiving the first motor command from a memory or software component on the first robot. Pet. 15–17; Ex. 1005, code (57), 2:13–18, 3:28–39, 33:14–30, Fig. 7. Patent Owner does not dispute that Grotmol discloses this limitation of claim 2.

Claim 2 recites “wherein the learning the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device includes storing the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device into or onto at least one of: at least one non-transitory machine readable medium of the one or more non-transitory machine readable media, another one or more non-transitory machine readable media, one or more volatile memories, one or more nonvolatile memories, one or more storage devices, or one or more storage systems.” Ex. 1001, 160:64–161:7. Grotmol discloses correlating the first image with the first motor command in a non-volatile memory. Pet. 17; Ex. 1005, 3:27–39, 38:33–42. Patent Owner does not dispute that Grotmol discloses this limitation of claim 2.

4. Claim 3

Claim 3 depends from claim 1, and recites “wherein the learning the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device includes determining that the first one or more instruction sets for operating the first device temporally correspond to the first one or more digital pictures.” Ex. 1001, 161:8–13. Grotmol discloses determining that the first motor command temporally corresponds to the first image. Pet. 18; Ex. 1005, code (57), 33:59–62, 38:39–72, 39:17–19, 43:5–9. Patent Owner does not dispute that Grotmol discloses the limitations of claim 3.

5. Claim 4

Claim 4 depends from claim 1, and recites “receiving or generating a new one or more digital pictures.” Ex. 1001, 161:18–19. Grotmol discloses receiving a new image. Pet. 19; Ex. 1005, code (57), 10:15–20, 38:51–58,

39:23–26. Patent Owner does not dispute that Grotmol discloses this limitation of claim 4.

Claim 4 also recites “determining the first one or more instruction sets for operating the first device based on at least partial match between the new one or more digital pictures and the first one or more digital pictures.”

Ex. 1001, 161:20–23. Grotmol discloses determining the first motor command based on an at least partial match between the new image and the first image stored in the training buffer. Pet. 20–22; Ex. 1005, code (57), 3:14–16, 4:30–38, 28:19–24, 41:8–13, 43:5–9. Patent Owner does not dispute that Grotmol discloses this limitation of claim 4.

Claim 4 recites “at least in response to the determining, causing the first device or a second device to perform one or more operations defined by the first one or more instruction sets for operating the first device.”

Ex. 1001, 161:24–27. Grotmol discloses causing the first robot to perform actions defined by the determined first motor command. Pet. 22–24; Ex. 1005, code (57), 2:34–41, 3:12–13, 43:4–11. Patent Owner does not dispute that Grotmol discloses this limitation of claim 4.

6. Claim 5

Claim 5 depends from claim 4, and recites “wherein the causing the first device or the second device to perform the one or more operations defined by the first one or more instruction sets for operating the first device includes executing the first one or more instruction sets for operating the first device.” Ex. 1001, 161:28–32. Grotmol discloses causing the first robot to execute the determined first motor command. Pet. 24–25; Ex. 1005, 2:33–41, 3:12–13, 33:21–32, 43:4–11. Patent Owner does not dispute that Grotmol discloses the limitations of claim 5.

7. Claim 6

Claim 6 depends from claim 4, and recites “wherein the determining the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures includes determining at least partial match between one or more portions of the new one or more digital pictures that represent one or more objects and one or more portions of the first one or more digital pictures that represent one or more objects.” Ex. 1001, 161:33–42. Grotmol discloses determining the first motor command based on an at least partial match between portions of the new image that represent an object and portions of the first image that represent an object. Pet. 25–27; Ex. 1005, code (57), 2:29–37, 8:65–9:3, 9:41–52, 10:23–26, 28:19–24, 38:56–65, 43:5–9. Patent Owner does not dispute that Grotmol discloses the limitations of claim 6.

8. Claim 7

Claim 7 depends from claim 4, and recites “wherein the determining the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures includes determining at least partial match between one or more objects detected in the new one or more digital pictures and one or more objects detected in the first one or more digital pictures.” Ex. 1001, 161:43–50. Grotmol discloses determining the first motor command based on an at least partial match between an object detected in the new image and an object detected in the first image. Pet. 28–29; Pet. Reply 3; Ex. 1005, code (57), 2:29–37, 4:22–42; 8:57–9:13, 9:31–52, 28:19–24, 38:56–65, 43:5–9.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses determining an at least partial match between one or more objects detected in the new one or more digital pictures and one or more objects detected in the first one or more digital pictures. PO Resp. 12–14; PO Sur-reply 3–6. Specifically, Patent Owner contends that “[o]nce the objects are detected in pictures as claimed in claim 7, they are separate from the pictures themselves, and are therefore, different than images or portions thereof in Grotmol.” PO Resp. 12 (citing Ex. 2007 ¶¶ 73–77) (emphasis omitted). And, according to Patent Owner, “Grotmol does not disclose comparing anything detected in images that is separate from the images, and only discloses comparing images or portions (i.e., features) thereof.” *Id.* at 12–13.

Patent Owner also contends that the portions of Grotmol cited by Petitioner disclose using “image features,” but the image features “are not the detected objects themselves, and [thus] comparing image features is logically different than the recited matching of the resulting detected objects.” PO Sur-reply 3–4; *see* PO Resp. 13. For example, Patent Owner asserts that Grotmol “only discusses values that indicate the presence or absence of an object, and not detecting the objects themselves, much less comparing those detected objects to determine whether there is a match between the detected objects.” PO Sur-reply 4 (citing Ex. 1005, 28:19–24; Ex. 2007 ¶¶ 76–77) (emphasis omitted).

Patent Owner’s arguments are unavailing. Grotmol discloses that “the term feature may be used to describe one or more integer or floating point *values characterizing the input, e.g., the presence or absence of an . . . object*, at particular locations in the image.” Ex. 1005, 28:19–27 (emphasis

added). Grotmol also discloses “characteriz[ing] [the] similarity between *features* of the [input] and *features* of the given training set.” *Id.* at 4:22–38 (emphasis added). In other words, Grotmol’s features are values separate from an image that characterize the presence of an object in the image. *Id.* at 4:22–38, 28:19–27; Ex. 1010 ¶¶ 13–14. And, thus, by comparing the features of an input image with the features of a stored image, Grotmol determines if there is an at least partial match between the objects detected in those images. Ex. 1005, 4:22–38, 28:19–27; Ex. 1010 ¶¶ 13–14.

9. Claim 8

Claim 8 depends from claim 4, and recites “wherein the first one or more instruction sets for operating the first device include one or more information about one or more states of: the first device, or a portion of the first device.” Ex. 1001, 161:51–54. Grotmol discloses that the first motor command includes information about the state of the first robot, such as the first robot’s motion or operational parameters. Pet. 29; Ex. 1005, 3:36–39, 39:16–22. Patent Owner does not dispute that Grotmol discloses the limitations of claim 8.

10. Claim 9

Claim 9 depends from claim 4, and recites
wherein the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device are included in a knowledgebase, and wherein the knowledgebase further includes a second one or more digital pictures correlated with a second one or more instruction sets for operating the first device, and wherein at least a portion of the first one or more digital pictures or at least a portion of the first one or more instruction sets for operating the first device is learned in a first learning process that includes operating the first device at least partially by a first user, and wherein at least a portion of the second one or more digital pictures or at least a

portion of the second one or more instruction sets for operating the first device is learned in a second learning process that includes operating the first device at least partially by the first user.

Ex. 1001, 161:55–162:3. Grotmol discloses that the first robot’s training buffer includes a first training set learned in a first process when a first user operates the first robot, and a second training set learned in a second process when the first user operates the first robot. Pet. 30–31; Ex. 1005, code (57), 3:27–39, 8:66–9:3, 10:23–26, 24:17–67, 26:1–20, 38:36–58, 39:13–22.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses a second learning process. PO Resp. 14–16; PO Sur-reply 6–9. Specifically, Patent Owner contends that “Grotmol only discloses *one* user operating *one* device in *one* learning process, and therefore fails to disclose any second learning process.” PO Resp. 15 (citing Ex. 2007 ¶¶ 78–81). Patent Owner also contends that Petitioner’s reliance on “Grotmol’s discussion of training multiple complex behaviors” is insufficient because “Grotmol explains that the user trains the device in a single learning process to learn a single task involving fetching.” PO Sur-reply 7–8 (citing Ex. 1005, 25:30–26:34) (emphasis omitted). According to Patent Owner, “Petitioner is trying to improperly conflate multiple behaviors in a single learning process into multiple actual learning processes.”³ *Id.* at 8.

Patent Owner’s arguments are unavailing. Grotmol discloses that “[t]he system may be configured to learn” a first behavior from a user.

³ For claim 9, Patent Owner asserts that Petitioner improperly relies on Grotmol’s disclosure of “multiple controllers” for the first time in the Reply. PO Sur-reply 1–3, 6. We do not rely on the identified argument from the Reply in this Decision. Thus, we need not decide whether the identified argument is an improper new theory of unpatentability.

Ex. 1005, 25:30–42. Grotmol also discloses that “[a]fter [the] user is done training a particular behavior, he may *create another module* and activate it” so that “[t]he system may be configured to learn [a] second behavior from the user.” *Id.* at 26:1–8 (emphasis added). Thus, Grotmol discloses that a user trains a first behavior and then creates a second module (i.e., a second learning process) for training a second behavior.⁴ *Id.* at 25:30–42, 26:1–8; Ex. 1003 ¶ 245.

11. Claim 11

Claim 11 depends from claim 4, and recites

wherein the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device are included in a knowledgebase, and wherein the knowledgebase further includes a second one or more digital pictures correlated with a second one or more instruction sets for operating a third device, and wherein at least a portion of the first one or more digital pictures or at least a portion of the first one or more instruction sets for operating the first device is learned in a first learning process that includes operating the first device at least partially by a first user, and wherein at least a portion of the second one or more digital pictures or at least a portion of the second one or more instruction sets for operating the third device is learned in a second learning process that includes operating the third device at least partially by: the first user, or a second user.

Ex. 1001, 162:21–36. Grotmol discloses that the first robot’s training buffer includes a first training set learned in a first process when a first user operates the first robot. Pet. 32–33; Ex. 1005, 3:13–39, 24:17–67, 26:1–20,

⁴ To the extent Patent Owner argued at the oral hearing that claim 9 requires two “different way[s]” of learning behaviors, Patent Owner does not present that argument in the Response or Sur-reply. Tr. 39:9–41:11; *see* PO Resp. 14–16; PO Sur-reply 6–9. Further, Patent Owner does not identify specific evidence to support that interpretation. *See* Tr. 39:9–41:11.

33:12–58, 38:36–58, 39:13–22. Grotmol also discloses that the first robot’s training buffer includes a second training set learned in a second process when the first user operates a third robot. Pet. 32–33; Ex. 1003 ¶¶ 247–249; Ex. 1005, 26:1–20, 33:30–32. Patent Owner does not dispute that Grotmol discloses the limitations of claim 11.

12. Claim 12

Claim 12 depends from claim 4, and recites “wherein the new one or more digital pictures depict at least a portion of the first device’s surrounding, and wherein the first one or more instruction sets for operating the first device are applied to the first device, and wherein the first device is caused to perform the one or more operations defined by the first one or more instruction sets for operating the first device.” Ex. 1001, 162:37–43. Grotmol discloses receiving a new image of the first robot’s visual scene when following a trajectory. Pet. 10–11, 19, 33; Ex. 1005, 8:57–9:3, 10:15–26, 38:52–58. Grotmol also discloses causing the first robot to perform actions defined by the determined first motor command. Pet. 22–24, 33; Ex. 1005, 2:34–41, 3:12–13, 43:4–11. Patent Owner does not dispute that Grotmol discloses the limitations of claim 12.

13. Claim 13

Claim 13 depends from claim 4, and recites “wherein the new one or more digital pictures depict at least a portion of the second device’s surrounding, and wherein the first one or more instruction sets for operating the first device are applied to the second device, and wherein the second device is caused to perform the one or more operations defined by the first one or more instruction sets for operating the first device.” Ex. 1001, 162:44–50. Grotmol discloses loading a first training set from the first robot

to a second robot. Pet. 33–34; Ex. 1005, 33:12–58. Grotmol also discloses that the second robot receives a new image of the second robot’s visual scene when following a trajectory, and determines the first motor command based on an at least partial match between the new image and the first image in the first training set. Pet. 20–22, 34–35; Ex. 1003 ¶ 254; Ex. 1005, code (57), 3:14–16, 4:30–38, 28:19–24, 41:8–13, 43:5–9. Patent Owner does not dispute that Grotmol discloses the limitations of claim 13.

14. Claim 14

Claim 14 depends from claim 4, and recites

wherein the new one or more digital pictures depict at least a portion of the second device’s surrounding, and wherein the first one or more instruction sets for operating the first device or a copy of the first one or more instruction sets for operating the first device are modified and applied to the second device, and wherein the second device is caused to perform one or more operations defined by: the modified the first one or more instruction sets for operating the first device, or the modified the copy of the first one or more instruction sets for operating the first device.

Ex. 1001, 162:51–61. Grotmol discloses loading a first training set from the first robot to a second robot. Pet. 33–34, 36; Ex. 1005, 33:12–58. Grotmol discloses that the second robot receives a new image of the second robot’s visual scene when following a trajectory. Pet. 19, 34, 36; Ex. 1005, code (57), 10:15–20, 38:51–58, 39:23–26. Grotmol also discloses that the second robot modifies the first motor command from the first training set to compensate for position or orientation mismatch by combining the first motor command with an output from a proportional-integral-derivative (“PID”) controller. Pet. 36; Pet. Reply 9–10; Ex. 1005, code (57), 42:46–43:11.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses modifying the first instruction set. PO Resp. 16–18; PO Sur-reply 9–12. Specifically, Patent Owner contends that “Petitioner points to controlling a robot’s trajectory to compensate for position and orientation mismatch and that new commands may be issued based on shifted images,” but “issuing *new* commands based on shifted images does not disclose modifying instruction sets.” PO Resp. 17 (citing Ex. 1005, 42:46–43:3; Ex. 2007 ¶¶ 82–85). Patent Owner also contends “Petitioner points to Grotmol’s disclosure of combining motor commands with the output of a PID controller to stabilize the robot,” but “[c]ombining two distinct elements does not modify either of the elements, but instead joins together or combines the elements.” PO Sur-reply 10–11. Patent Owner further asserts that “Petitioner’s contention describes motor commands first loaded into a second robot and then combined, whereas claim 14 recites instruction sets first modified and then applied to the second device, which is clearly different.” *Id.* at 11–12.

Patent Owner’s arguments are unavailing. Grotmol discloses that “[a] PID controller may be used in order to reduce/maintain the error metric during operation of the robot.” Ex. 1005, 43:4–5. For example, “motor commands at a given time step may be obtained by taking the stored motor commands from the training buffer that may correspond to the best matching stored image,” and “[t]hose motor commands may be combined with the output from the PID controller in order to stabilize operation of the robot.” *Id.* at 43:5–11. Thus, Grotmol discloses obtaining a motor command from the training buffer, combining that motor command with the PID controller’s output, and then applying the final motor command to the robot. *Id.* at 43:4–

11; Ex. 1010 ¶¶ 24–25. Neither Patent Owner nor its declarant, Dr. Eli Saber, identify specific evidence indicating that the term “modify” excludes combining the first instruction set with additional information. *See* PO Resp. 16–18; PO Sur-reply 9–12; Tr. 50:14–51:4, 69:8–20 (citing Ex. 1001, 131:50–57); Ex. 2007 ¶¶ 82–85.

Further, claim 14 recites “wherein the first one or more instruction sets for operating the first device or a copy of the first one or more instruction sets for operating the first device *are modified and applied to the second device.*” Ex. 1001, 162:51–61 (emphasis added). Thus, claim 14 recites modifying the first instruction set and applying it to the second device, but claim 14 does not require that the first device perform the modification. *Id.* Neither Patent Owner nor its declarant, Dr. Saber, identify specific evidence that indicates the first device must perform the modification. *See* PO Resp. 16–18; PO Sur-reply 9–12; Ex. 2007 ¶¶ 82–85. As discussed above, Grotmol discloses that the second robot loads a first training set from the first robot, the second robot modifies the first motor command from the first training set, and the second robot performs an operation defined by the modified first motor command. Ex. 1005, 33:12–58, 42:46–43:11; Ex. 1010 ¶¶ 24–25.

Patent Owner also argues that “Petitioner never argues nor even addresses ‘wherein the new one or more digital pictures depict at least a portion of the second device’s surrounding’ limitation of claim 14.” PO Sur-reply 12. We disagree. Petitioner’s assertions for claim 14 refer back to Petitioner’s assertions for claim 13. Pet. 36 (“*see supra* claim 13”). Petitioner’s assertions for claim 13 address the identified limitation of claim 14, and Patent Owner does not dispute that Grotmol discloses that limitation.

Pet. 34 (“the second device would determine the similarity measure between the new image (new digital picture depicting at least a portion of the second device’s surrounding) and an image from the training set”); *see* Section II.D.13.

15. Claim 15

Claim 15 depends from claim 4, and recites “modifying: the first one or more instruction sets for operating the first device, or a copy of the first one or more instruction sets for operating the first device.” Ex. 1001, 162:65–163:2. Claim 15 also recites “determining the modified the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures, or determining the modified the copy of the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures.” *Id.* at 163:2–15.

Petitioner presents several arguments for the above limitations of claim 15. First, Petitioner argues that “Grotmol discloses that the motor commands at a given time step may be obtained by taking the stored motor commands from the training buffer that may correspond to the *best matching* stored image and the motor commands may be modified to compensate for, e.g., position match and orientation match.” Pet. 38 (citing Ex. 1005, code (57), 2:29–37, 42:46–43:11); *see* Pet. Reply 14. Petitioner’s argument is unavailing. As discussed above, claim 15 requires modifying the first instruction set *before* determining the modified first instruction set based on an at least partial match between the new digital picture and the first digital picture. *See* Section II.C.2. But the portions of Grotmol cited by Petitioner

disclose modifying the first motor command *after* determining the first motor command based on a partial match. *See* Pet. 38; Pet. Reply 14; Tr. 24:4–13; Ex. 1005, code (57), 2:29–37, 42:46–43:11.

Second, Petitioner argues that “Grotmol’s ‘combining’ action provides the claimed ‘modifying’ step that produces, e.g., a combined/modified control command 420, and Grotmol’s subsequent processing and decoding of the combined/modified control command prior to execution of the combined/modified control command provide the claimed step of ‘determining’ the modified first one or more instruction sets.” Pet. Reply 14–15 (citing Ex. 1005, 15:18–62, 42:46–43:11, Fig. 4A; Ex. 1010 ¶ 34). Petitioner’s argument is unavailing. Claim 15 recites “determining the modified the first one or more instruction sets . . . *based on the at least partial match* between the new one or more digital pictures and the first one or more digital pictures.” Ex. 1001, 163:7–15 (emphasis added). Petitioner, though, does not explain specifically how Grotmol’s “subsequent processing and decoding” of the modified motor command is based on the at least partial match between the new picture and the first picture. *See* Pet. Reply 14–15; Ex. 1010 ¶ 34.

Third, Petitioner argued at the oral hearing that its reliance on Grotmol’s override mode and correct mode for claim 18 also is applicable to claim 15. Tr. 16:9–17:8, 24:4–18; *see* Section II.D.18. But Petitioner does not rely on Grotmol’s override mode or correct mode for claim 15 in the Petition or Reply. *See* Pet. 37–39; Pet. Reply 12–15. Petitioner also does not argue in the Petition or Reply that the assertions made for claim 18 apply to claim 15, or otherwise reference the assertions made for claim 18 in the analysis of claim 15. *See* Pet. 37–39; Pet. Reply 12–15; *Netflix, Inc. v. DivX*,

LLC, 84 F.4th 1371, 1377 (Fed. Cir. 2023) (“[T]he Board should . . . not have to decode a petition to locate additional arguments beyond the ones clearly made.”) Thus, we decline to consider Grotmol’s override mode and correct mode for claim 15 because Petitioner presented that theory for the first time at the oral hearing. *See* Consolidated Trial Practice Guide, 85–86 (Nov. 2019), *available at* <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf> (“TPG”) (“During an oral hearing, a party . . . may only present arguments relied upon in the papers previously submitted.”); *Dell Inc. v. Acceleron, LLC*, 818 F.3d 1293, 1301 (Fed. Cir. 2016) (“[T]he Board denied Acceleron its procedural rights by relying in its decision on a factual assertion introduced into the proceeding only at oral argument.”).

For the foregoing reasons, Petitioner does not show sufficiently that Grotmol discloses the limitations of claim 15.

16. Claim 16

Claim 16 depends from claim 4, and recites

modifying at least one of: the first one or more digital pictures, a copy of the first one or more digital pictures, the new one or more digital pictures, or a copy of the new one or more digital pictures, and wherein the at least partial match between the new one or more digital pictures and the first one or more digital pictures includes: (i) at least partial match between the modified the new one or more digital pictures and the first one or more digital pictures, (ii) at least partial match between the modified the copy of the new one or more digital pictures and the first one or more digital pictures, (iii) at least partial match between the new one or more digital pictures and the modified the first one or more digital pictures, (iv) at least partial match between the new one or more digital pictures and the modified the copy of the first one or more digital pictures, (v) at least partial match between the modified the new one or more digital pictures and the modified the first one or more digital pictures, (vi) at least partial match between the modified the copy of the new one or

more digital pictures and the modified the copy of the first one or more digital pictures, (vii) at least partial match between the modified the new one or more digital pictures and the modified the copy of the first one or more digital pictures, or (viii) at least partial match between the modified the copy of the new one or more digital pictures and the modified the first one or more digital pictures.

Ex. 1001, 163:28–58. Grotmol discloses pre-processing the first image and correlating the pre-processed first image with the first motor command in the training buffer. Pet. 39–40; Ex. 1005, 3:42–46, 4:18–22, 4:58–63, 30:47–31:8, 31:61–32:5, 39:13–22. Grotmol also discloses determining the first motor command based on an at least partial match between the new image and the pre-processed first image stored in the training buffer. Pet. 20–22, 40; Ex. 1005, code (57), 3:14–16, 4:30–38, 28:19–24, 41:8–13, 43:5–9.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses determining an at least partial match between the new digital picture and the modified first digital picture. PO Resp. 23–25; PO Sur-reply 15–16. Patent Owner contends that “Petitioner points to Grotmol’s disclosure of preprocessing images and scaling pixels,” but “Petitioner has not pointed to anything in Grotmol to show a *modified digital picture used in a matching process*.” PO Resp. 23–24 (citing Pet. 39–40; Ex. 1005, 4:18–22, 39:13–22 Ex. 2007 ¶¶ 94–97). According to Patent Owner, “[n]othing in Grotmol discloses that any image is modified and then used in the claimed matching procedure.” PO Sur-reply 15 (emphasis omitted).

Patent Owner’s arguments are unavailing. Grotmol discloses that “[d]uring training, images (e.g., raw and/or pre-processed) may be stored in a memory buffer (training buffer),” and “[m]otor commands issued by a

trainer corresponding to time instances when the images are acquired may be stored.” Ex. 1005, 39:13–19. In other words, Grotmol correlates a pre-processed (i.e., modified) image with a motor command in the training buffer. *Id.* Grotmol also discloses that “[d]uring autonomous operation, an acquired image may be compared with one or more images from the training buffer in order to determine the most likely match.” *Id.* at code (57); *see id.* at 39:23–26. Thus, Grotmol determines an at least partial match between an acquired (i.e., new) image and a pre-processed (i.e., modified) image stored in the training buffer. *Id.* at code (57), 39:13–26; Ex. 1010 ¶ 38.

17. Claim 17

Claim 17 depends from claim 4, and recites “modifying: the first one or more digital pictures, or a copy of the first one or more digital pictures.” Ex. 1001, 163:62–64. Grotmol discloses preprocessing the first image. Pet. 41–42; Ex. 1005, 3:41–46, 4:18–22, 4:58–62, 30:47–31:8, 31:61–32:5, 39:13–22. Patent Owner does not dispute that Grotmol discloses this limitation of claim 17.

Claim 17 also recites “wherein the learning the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device includes: learning the modified the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device, or learning the modified the copy of the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device.” Ex. 1001, 163:65–164:6. Grotmol discloses correlating the pre-processed first image with the first motor command in the training buffer. Pet. 41–42; Ex. 1005, code (57), 4:8–22, 30:37–31:2, 31:65–32:5, 33:59–62, 39:13–22, 43:5–9.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses learning the modified first picture correlated with the first instruction set. PO Resp. 25–28; PO Sur-reply 16–19. Specifically, Patent Owner contends that “Petitioner points to Grotmol’s disclosure of preprocessing images and scaling pixels,” but “Petitioner has not pointed to anything in Grotmol . . . [that] discloses that a modified image correlated with an instruction set is learned.” PO Resp. 26–27 (citing Pet. 39–40; Ex. 1005, 4:18–22, 39:13–22; Ex. 2007 ¶¶ 98–102). According to Patent Owner, “Petitioner’s statement that ‘the pre-processed (modified) digital pictures are stored in the training buffer in association with’ motor commands . . . is Petitioner’s own words unsupported by Grotmol’s disclosure.” PO Sur-reply 16 (citing Pet. Reply 18–19).

Patent Owner’s arguments are unavailing. Grotmol discloses that “[d]uring training, images (e.g., raw and/or pre-processed) may be stored in a memory buffer (training buffer),” and “[m]otor commands issued by a trainer corresponding to time instances when the images are acquired may be stored.” Ex. 1005, 39:13–19. Thus, Petitioner’s assertion is supported by Grotmol’s disclosure of storing a pre-processed (i.e., modified) image and a “corresponding” motor command in the training buffer. *Id.*; Ex. 1010 ¶ 43.

Claim 17 recites “wherein the determining the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures includes: determining the first one or more instruction sets for operating the first device based on at least partial match between the new one or more digital pictures and the modified the first one or more digital pictures, or determining the first one or more instruction sets for operating

the first device based on at least partial match between the new one or more digital pictures and the modified the copy of the first one or more digital pictures.” Ex. 1001, 164:7–20. Grotmol discloses determining the first motor command based on an at least partial match between the new image and the pre-processed first image stored in the training buffer. Pet. 20–22, 42–43; Ex. 1005, code (57), 2:30–37, 3:14–16, 4:30–38, 28:19–24, 41:8–13, 43:5–9.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses determining the first instruction set based on an at least partial match between the new digital picture and the modified digital picture. PO Resp. 25–28; PO Sur-reply 16–19. Specifically, Patent Owner contends that “Petitioner points to Grotmol’s disclosure of preprocessing images and scaling pixels,” but “Petitioner has not pointed to anything in Grotmol . . . [that] discloses that . . . the modified image is used in the matching procedure.” PO Resp. 26–27 (citing Pet. 39–40; Ex. 1005, 4:18–22, 39:13–22; Ex. 2007 ¶¶ 98–102). According to Patent Owner, “Petitioner’s argument that ‘Grotmol . . . discloses use of pre-processed (modified) digital pictures in a matching process to determine motor commands,’ is . . . conclusory and unsupported by Grotmol’s disclosure.” PO Sur-reply 16–17 (citing Pet. Reply 19).

Patent Owner’s arguments are unavailing. As discussed above, Grotmol discloses storing a pre-processed (i.e., modified) image and a corresponding motor command in the training buffer. Ex. 1005, 39:13–19. Grotmol also discloses that “[d]uring autonomous operation, an acquired image may be compared with one or more images from the training buffer in order to determine the most likely match.” *Id.* at code (57); *see id.* at 39:23–

26. Thus, Petitioner’s assertion is supported by Grotmol’s disclosure of determining a motor command based on an at least partial match between an acquired (i.e., new) image and a pre-processed (i.e., modified) image stored in the training buffer. *Id.* at code (57), 39:13–26; Ex. 1010 ¶ 44.

18. Claim 18

Claim 18 depends from claim 4, and recites “modifying: the first one or more instruction sets for operating the first device, or a copy of the first one or more instruction sets for operating the first device.” Ex. 1001, 164:24–28. Grotmol discloses overriding or correcting the first motor command in the first training set based on a teacher’s command. Pet. 43–45; Pet. Reply 22; Ex. 1005, 22:27–46, 23:12–29.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses modifying the first instruction set. PO Resp. 28–31; PO Sur-reply 17–18. First, Patent Owner contends that Grotmol discloses “replacing an original, whole, unmodified command with another (i.e., overridden), whole, unmodified command.” PO Resp. 30–31 (citing Ex. 1005, 23:20–22; Ex. 2007 ¶¶ 104–107) (emphasis omitted); *see* PO Sur-reply 17. According to Patent Owner, “[r]eplacing an element with another element is fundamentally different than modifying the original element.” PO Resp. 31 (citing Ex. 2007 ¶¶ 106–107); *see* PO Sur-reply 17. Second, Patent Owner contends that “Grotmol’s correct mode discloses ‘sum[ming] the teacher’s command with what the robot already knows to get a final motor command,’ . . . not modifying any commands themselves.” PO Sur-reply 19 (citing Ex. 1005, 23:23–29) (emphasis omitted). Patent Owner asserts that “[a]dding two elements is different than modifying any one of the elements.” *Id.*

Patent Owner's arguments are unavailing. Grotmol discloses that "[i]n the override mode, the robot may execute what it has learned, unless a command is sent by the teacher." Ex. 1005, 23:13–14. "For example, if the robot is turning left but the teacher wants the robot to turn right and provides a right turn command, then the robot may [heed] the teacher's command, perform the action, and try to remember it for the next time the same situation occurs." *Id.* at 23:16–21. Thus, Grotmol discloses obtaining a motor command from a training set (e.g., left turn) and changing that motor command based on a teacher's input (e.g., right turn). *Id.* at 23:13–21; Ex. 1010 ¶¶ 46–47. Neither Patent Owner nor its declarant, Dr. Saber, identify specific evidence indicating that the term "modify" excludes changing the first instruction set to a different instruction set. *See* PO Resp. 28–31; PO Sur-reply 17–18; Tr. 50:14–51:4, 69:8–20 (citing Ex. 1001, 131:50–57); Ex. 2007 ¶¶ 104–107. In fact, the '583 patent's use of the term "modifying" indicates that it includes changing the first instruction set to a different instruction set. Pet. Reply 21; Ex. 1001, 136:9–11, 140:15–18, 147:36–42.

Alternatively, Grotmol also discloses that "[i]n the correct mode, the robot may integrate what the teacher commands with what the robot already knows." Ex. 1005, 23:23–24. "In some implementations, the robot may sum the teacher's command with what the robot already knows to get a final motor command." *Id.* at 23:24–27. Thus, Grotmol discloses obtaining a motor command from a training set and combining that motor command with a teacher's input to produce a final motor command. *Id.* at 23:23–27; Ex. 1010 ¶ 49. Neither Patent Owner nor its declarant, Dr. Saber, identify specific evidence indicating that the term "modify" excludes combining the

first instruction set with additional information. *See* PO Sur-reply 19; Tr. 50:14–51:4, 69:8–20 (citing Ex. 1001, 131:50–57).

Claim 18 also recites “wherein the learning the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device includes: learning the first one or more digital pictures correlated with the modified the first one or more instruction sets for operating the first device, or learning the first one or more digital pictures correlated with the modified the copy of the first one or more instruction sets for operating the first device.” Ex. 1001, 164:28–37. Grotmol discloses correlating the first image with the overridden or corrected first motor command in the training buffer. Pet. 12–14, 45; Pet. Reply 19–22; Ex. 1005, code (57), 3:27–39, 22:27–46, 23:4–35, 24:17–20, 24:57–61, 33:14–30, 33:59–62, 34:50–55, 39:13–22, 42:37–40, 42:46–58, 43:5–11.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses learning the first digital picture correlated with the modified first instruction set. PO Resp. 31; PO Sur-reply 18–19. Patent Owner contends that “Petitioner’s argument that a teacher’s input is learned in Grotmol is irrelevant, as the teacher’s input provides a whole new, unmodified instruction set or command and does not modify any command or instruction set.” PO Sur-reply 18–19 (citing Ex. 2007 ¶¶ 107–110) (emphasis omitted).

Patent Owner’s arguments are unavailing. As discussed above, Grotmol’s override mode and correct mode each disclose modifying a motor command. Further, Grotmol discloses that in both the override mode and the correct mode, the robot “[l]earns” an image correlated to the overridden

or corrected motor command. Ex. 1005, 22:37–43; *see also id.* at 23:13–21 (“In the override mode, . . . if the robot is turning left but the teacher wants the robot to turn right and provides a right turn command, then the robot may [heed] the teacher’s command, perform the action, and *try to remember it for the next time the same situation occurs.*”) (emphasis added).

Claim 18 recites

wherein the determining the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures includes: determining the modified the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures, or determining the modified the copy of the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures.

Ex. 1001, 164:38–51. Grotmol discloses determining the overridden or corrected first motor command based on an at least partial match between the new image and the first image stored in the training buffer. Pet. 20–22, 45–46; Pet. Reply 19–22; Ex. 1005, code (57), 3:14–16, 3:27–39, 4:30–38, 22:27–46, 23:20–35, 28:19–24, 33:59–62, 39:13–22, 41:8–13, 42:37–40, 42:46–58, 43:5–11.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses determining the modified first instruction set based on an at least partial match between the new digital picture and the first digital picture. PO Resp. 31–32; PO Sur-reply 19. Specifically, Patent Owner contends that Gromol’s alleged “modifying of motor commands . . . occurs after obtaining (i.e. determining) the motor commands from the training buffer, whereas the instruction sets in claim 18 are modified before they are

learned, and especially before they are determined.” PO Resp. 32 (citing Ex. 2007 ¶¶ 108–110) (emphasis omitted). Patent Owner also contends that “Grotmol’s correct mode (and Grotmol in general) . . . fails to disclose that any instruction sets are learned as modified, [and] determined as modified.” PO Sur-reply 19 (emphasis omitted).

Patent Owner’s arguments are unavailing. Grotmol discloses that “[i]n the override mode, the robot may execute what it has learned, unless a command is sent by the teacher.” Ex. 1005, 23:13–14. “For example, if the robot is turning left but the teacher wants the robot to turn right and provides a right turn command, then the robot may [heed] the teacher’s command, perform the action, and try to remember it for the next time the same situation occurs.” *Id.* at 23:16–21. Similarly, Grotmol discloses that “[i]n the correct mode, the robot may integrate what the teacher commands with what the robot already knows,” and then “[l]earn the resulting association.” *Id.* at 22:40–43, 23:23–24. Thus, Grotmol discloses modifying a motor command, then learning an image correlated to the modified motor command, and finally determining and performing the modified motor command “the next time the same situation occurs.” *Id.* at 22:37–43, 23:13–24; Ex. 1010 ¶¶ 49–50.

Claim 18 recites “wherein the causing the first device or the second device to perform the one or more operations defined by the first one or more instruction sets for operating the first device includes: causing the first device or the second device to perform one or more operations defined by the modified the first one or more instruction sets for operating the first device, or causing the first device or the second device to perform one or more operations defined by the modified the copy of the first one or more

instruction sets for operating the first device.” Ex. 1001, 164:51–62.

Grotmol discloses causing the first robot to perform actions defined by the overridden or corrected first motor command. Pet. 22–24, 46–47; Pet. Reply 19–22; Ex. 1005, code (57), 2:34–41, 3:12–13, 3:27–39, 22:27–46, 23:20–35, 33:59–62, 39:13–22, 42:37–40, 42:46–58, 43:4–11.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses causing the first device to perform the operations defined by the modified first instruction set. PO Resp. 32–33; PO Sur-reply 19. Patent Owner contends that “Petitioner’s only argument that Grotmol discloses the claimed causing operations defined by the modified instruction sets is that the device’s actual operation can be modified.” PO Resp. 32 (citing Pet. 46). But, according to Patent Owner, “[t]he inquiry here is not whether a device’s operation can or cannot be modified, but about the device’s operation that is based on unmodified instructions that Grotmol actually discloses.” *Id.* (citing Ex. 2007 ¶ 110) (emphasis omitted).

Patent Owner’s arguments are unavailing. As discussed above, Grotmol’s override mode and correct mode each disclose modifying a motor command. Further, as also discussed above, Grotmol discloses modifying a motor command, then learning an image correlated to the modified motor command, and finally determining and performing the modified motor command “the next time the same situation occurs.” Ex. 1005, 22:37–43, 23:13–24; Ex. 1010 ¶¶ 49–50.

19. Claim 19

Claim 19 depends from claim 4, and recites

an artificial intelligence system, and wherein the learning the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device includes

learning, at least in part by the artificial intelligence system, the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device, and wherein the determining the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures includes determining, at least in part by the artificial intelligence system, the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures.

Ex. 1001, 164:63–165:13. Grotmol discloses an artificial intelligence system. Pet. 47–48; Ex. 1005, 16:8–12, 48:1–2, 48:14–16. Grotmol’s artificial intelligence system correlates the first image with the first motor command in the training buffer. Pet. 12–14, 48; Ex. 1005, code (57), 3:27–39, 23:3–29, 24:17–20, 24:57–61, 33:14–30, 33:59–62, 34:49–55, 39:17–19, 43:6–9. Grotmol’s artificial intelligence system also determines the first motor command based on an at least partial match between the new image and the first image stored in the training buffer. Pet. 20–22, 48–49; Ex. 1005, code (57), 2:29–38, 3:14–16, 4:30–38, 28:19–40, 41:8–13, 43:5–9. Patent Owner does not dispute that Grotmol discloses the limitations of claim 19.

20. Claim 20

Claim 20 depends from claim 19, and recites

wherein the artificial intelligence system includes: one or more inputs for receiving one or more digital pictures, and one or more outputs for providing one or more instruction sets, and wherein the learning, at least in part by the artificial intelligence system, the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device includes applying the first one or more digital pictures to the inputs of the artificial intelligence system, and wherein the

determining, at least in part by the artificial intelligence system, the first one or more instruction sets for operating the first device based on the at least partial match between the new one or more digital pictures and the first one or more digital pictures includes: applying the new one or more digital pictures to the inputs of the artificial intelligence system; and receiving the first one or more instruction sets for operating the first device from the outputs of the artificial intelligence system.

Ex. 1001, 165:14–32. Grotmol discloses that the artificial intelligence system includes a sensor input for receiving a digital image and a control signal output for providing a motor command. Pet. 49–51; Ex. 1005, 9:1–3, 9:8–22, 15:26–33, 15:64–66, Figs. 4A, 8. Grotmol’s artificial intelligence system receives the first image and correlates the first image with the first motor command in the training buffer. Pet. 12–14, 51–52; Ex. 1005, code (57), 3:27–39, 23:4–29, 24:17–20, 24:57–61, 33:14–30, 33:59–62, 34:50–55, 39:17–19, 43:6–9. Grotmol’s artificial intelligence system also receives the new image and outputs the first motor command based on an at least partial match between the new image and the first image stored in the training buffer. Pet. 20–22, 51–52; Ex. 1005, code (57), 3:14–16, 4:30–38, 28:19–24, 41:8–13, 43:5–9. Patent Owner does not dispute that Grotmol discloses the limitations of claim 20.

21. Claim 21

Claim 21 depends from claim 20, and recites

wherein the one or more inputs for receiving the one or more digital pictures include: one input for one digital picture, multiple inputs for multiple digital pictures, one input for one portion of one digital picture, multiple inputs for multiple portions of one digital picture, multiple inputs for multiple portions of multiple digital pictures, an input for one representation of one digital picture, multiple inputs for multiple representations of multiple digital pictures, one input

for one representation of one portion of one digital picture, multiple inputs for multiple representations of multiple portions of one digital picture, or multiple inputs for multiple representations of multiple portions of multiple digital pictures.

Ex. 1001, 165:33–45. Grotmol discloses a sensor input for receiving a digital image. Pet. 52; Ex. 1005, 8:66–9:3, 10:16–22, 15:19–22, Figs. 4A, 8. Patent Owner does not dispute that Grotmol discloses the limitations of claim 21.

22. Claim 22

Claim 22 depends from claim 19, and recites “wherein the artificial intelligence system includes: a knowledgebase, or a neural network.”

Ex. 1001, 165:46–48. Grotmol discloses that the artificial intelligence system includes a knowledgebase. Pet. 52; Ex. 1005, code (57), 3:27–39, 8:66–9:3, 10:23–26, 38:36–58, 39:13–22. Patent Owner does not dispute that Grotmol discloses the limitations of claim 22.

23. Claim 23

Claim 23 depends from claim 4, and recites “wherein the first one or more digital pictures correlated with the first one or more instruction sets for operating the first device include the first one or more digital pictures connected, using at least one or more connections, with the first one or more instruction sets for operating the first device.” Ex. 1001, 165:49–54.

Grotmol discloses connecting the first image with the first motor command. Pet. 12–14, 52–53; Pet. Reply 24–25; Ex. 1005, 3:36–38, 4:38–42, 29:33–30:19, 33:24–27, 33:59–62, 43:6–9.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses the first digital picture connected, using a connection, with the first instruction set. PO Resp. 33–34; PO Sur-reply 19–22. Patent

Owner contends “[w]hen properly construed, each claimed connection is a relationship that includes a link,” but “[i]n Grotmol, an image is only associated with the motor control command, not . . . connected in a relationship that includes a link.” PO Resp. 33–34 (citing Ex. 2007 ¶¶ 111–113) (emphasis omitted). Patent Owner also contends that “Petitioner’s statement that ‘Grotmol organizes the images and motor commands in the training buffer into training sets where each training set specifically links’ a digital picture and an instruction set is an entirely unsupported attorney argument.” PO Sur-reply 22 (citing Pet. Reply 24). According to Patent Owner, “Grotmol’s Figures 14 and 15 merely disclose that images and instruction sets may be related.” *Id.* (citing Pet. Reply 24–25).

Patent Owner’s arguments are unavailing. Grotmol discloses that “[t]rained behaviors of the robotic device may be configured based on learning of associations between sensory context (e.g., presence of an obstacle in front of the robotic vehicle) and a respective action (e.g., right turn) during training.” Ex. 1005, 33:59–62. In particular, “[a] given training set may comprise an instance of the video frame . . . and an instance of a motor control indication configured to cause the robot to execute an action.” *Id.* at 3:36–39. And, as discussed above, Grotmol discloses that “motor commands at a given step may be obtained by taking the stored motor commands from the training buffer that may correspond to the best matching stored image.” *Id.* at 43:5–9. In other words, Grotmol links a specific image to a specific motor command so that when a new image matches the stored image, the robot performs the linked motor command. *Id.* at 3:36–39, 33:59–62, 43:5–9; Ex. 1010 ¶ 59.

24. Claim 24

Claim 24 depends from claim 4, and recites

wherein the first one or more digital pictures are: one or more whole digital pictures, one or more representations of one or more whole digital pictures, one or more portions of at least one digital picture, one or more representations of one or more portions of at least one digital picture, one or more features, one or more representations of one or more features, one or more collections of pixels, or one or more collections of values, and wherein the new one or more digital pictures are: one or more whole digital pictures, one or more representations of one or more whole digital pictures, one or more portions of at least one digital picture, one or more representations of one or more portions of at least one digital picture, one or more features, one or more representations of one or more features, one or more collections of pixels, or one or more collections of values.

Ex. 1001, 165:55–166:3. Grotmol discloses whole digital pictures, collections of pixels, and collections of values. Pet. 53; Ex. 1005, code (57), 8:66–9:3, 9:8–22. Patent Owner does not dispute that Grotmol discloses the limitations of claim 24.

25. Claim 26

Claim 26 depends from claim 4, and recites “wherein at least some elements of the system are included in: a single device, or multiple devices.”

Ex. 1001, 166:16–18. Grotmol discloses a self-contained robot. Pet. 54; Ex. 1005, 3:27–30. Patent Owner does not dispute that Grotmol discloses this limitation of claim 26.

Claim 26 also recites “wherein the one or more processors include: one or more microcontrollers, one or more computing devices, or one or more electronic devices.” Ex. 1001, 166:18–20. Grotmol discloses digital signal processors, field programmable gate arrays, programmable logic devices, and application-specific integrated circuits. Pet. 54–55; Ex. 1005,

7:30–42, 8:5–15, 10:15–21, 10:45–53, 25:38–42, 26:14–19. Patent Owner does not dispute that Grotmol discloses this limitation of claim 26.

Claim 26 recites “wherein the first device includes a robot, a vehicle, an appliance, an electronic device, or a mechanical machine.” Ex. 1001, 166:20–22. Grotmol discloses a first robot. Pet. 55–56; Ex. 1005, code (57), 3:27–30, 38:36–39. Patent Owner does not dispute that Grotmol discloses this limitation of claim 26.

Claim 26 recites “wherein the second device includes a robot, a vehicle, an appliance, an electronic device, or a mechanical machine.” Ex. 1001, 166:22–24. Grotmol discloses a second robot. Pet. 56; Ex. 1005, 33:12–58. Patent Owner does not dispute that Grotmol discloses this limitation of claim 26.

Claim 26 recites “wherein the first one or more digital pictures include: one or more still digital pictures, or one or more motion digital pictures, and wherein the new one or more digital pictures include: one or more still digital pictures, or one or more motion digital pictures.” Ex. 1001, 166:24–29. Grotmol discloses still digital images. Pet. 57; Ex. 1005, code (57), 3:27–39, 8:57–9:3, 10:16–22. Patent Owner does not dispute that Grotmol discloses this limitation of claim 26.

Claim 26 recites

wherein an instruction set of the first one or more instruction sets for operating the first device includes at least one of: only one instruction, a plurality of instructions, one or more inputs, one or more commands, one or more keywords, one or more symbols, one or more operators, one or more variables, one or more parameters, one or more characters, one or more numbers, one or more values, one or more signals, one or more binary bits, one or more functions, one or more function references, one or more objects, one or more object references, one or more

data structures, one or more data structure references, one or more states, one or more representations of one or more states, one or more representations of one or more user inputs, one or more codes, one or more data, or one or more information.

Ex. 1001, 166:29–43. Grotmol discloses motor commands. Pet. 57;

Ex. 1005, 3:27–39, 33:14–30, 39:13–22. Patent Owner does not dispute that Grotmol discloses this limitation of claim 26.

26. Claim 28

Claim 28 depends from claim 4, and recites “wherein the at least partial match between the new one or more digital pictures and the first one or more digital pictures is at least in part based on a product of one or more values that represent one or more portions of the new one or more digital pictures and one or more values that represent one or more portions of the first one or more digital pictures.” Ex. 1001, 166:65–167:4. Grotmol discloses determining an at least partial match between the new image and the first image using spatial frequency representation. Pet. 57–58; Ex. 1005, 40:34–63. Specifically, Grotmol discloses processing each image using a windowing function and a fast-Fourier Transform. Pet. 58; Ex. 1005, 40:34–47. Patent Owner does not dispute that Grotmol discloses the limitations of claim 28.

27. Claim 29

Claim 29 depends from claim 4, and recites “wherein the generating the new one or more digital pictures includes: detecting one or more objects in the first device’s surrounding or the second device’s surrounding; generating one or more representations of the one or more objects; and generating the new one or more digital pictures that include the one or more representations of the one or more objects.” Ex. 1001, 167:5–13. Grotmol

discloses a sensor for detecting an object in the first robot's surrounding and generating a new image that includes a generated representation of the object. Pet. 59–61; Ex. 1005, 7:60–63, 8:57–9:3, 9:41–52, 10:23–34, 24:31–25:5, 38:56–65, Fig. 20A.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses detecting an object in the first device's surrounding, generating a representation of the object, and generating a new picture that includes the representation of the object. PO Resp. 34–38; PO Sur-reply 22–24. Specifically, Patent Owner contends that “[t]he detected objects in claim 29 are separate entities from the new generated digital picture . . . and are detected prior to the generating of the new digital picture . . . , whereas objects in Grotmol are depicted in and are a part of the image captured by a camera and are never detected to be used to generate the image.” PO Resp. 35–36 (citing Ex. 2007 ¶¶ 114–116); *see* PO Sur-reply 23–24. Patent Owner also contends that Petitioner “talks about operation of a robot that may be based in part on recognized objects, not that a new digital picture is generated using detected objects and using generated representations of the detected objects.” PO Resp. 36 (citing Ex. 2007 ¶¶ 116–118); *see* PO Sur-reply 24. Patent Owner further contends that “Grotmol captures images by a camera but never detects objects in those images in order to generate representations of the detected objects in order to then generate a new digital

picture based on those representations of the detected objects.”⁵ PO Resp. 37 (citing Ex. 2007 ¶¶ 117–118) (emphasis omitted).

Patent Owner’s arguments are unavailing. Grotmol discloses a “sensor component . . . characterized by an aperture/field of view . . . (e.g., an extent of the observable world that may be captured by the sensor at a given moment).” Ex. 1005, 8:60–64. Grotmol’s sensor “provide[s] information associated with objects within the field-of-view,” including “representations of one or more objects.” *Id.* at 8:64–66, 10:23–26. In other words, Grotmol’s sensor detects an object in its field of view and generates a representation of the object. *Id.* Grotmol’s sensor then generates an image that “comprise[s] representations [of] one or more objects.” *Id.* at 38:52–58. Thus, Grotmol discloses generating a new image that includes a generated representation of the object. *Id.* at 8:60–66, 10:23–26, 38:52–58; Ex. 1003 ¶¶ 327–328.

28. *Claim 31*

Claim 31 depends from claim 4, and recites “wherein the generating the first one or more instruction sets for operating the first device includes generating the first one or more instruction sets for operating the first device as one or more representations of a second one or more instruction sets for operating the first device.” Ex. 1001, 167:21–26. Grotmol discloses replacing the first motor command stored at time t1 with a second motor

⁵ For claim 29, Patent Owner asserts that Petitioner’s reliance on Grotmol’s image 2010 was not “in the Petition (thus it should not be considered).” PO Sur-reply 24. We disagree. Petitioner relies on Grotmol’s “images 2000 and 2010” for its arguments regarding claim 29 in the Petition. Pet. 59–61.

command stored at time t0. Pet. 61–62; Ex. 1005, 34:18–21, 34:25–27, 34:43–45.

Patent Owner argues that Petitioner does not show sufficiently that Grotmol discloses generating a first instruction set as a representation of a second instruction set. PO Resp. 38–39; PO Sur-reply 24–25. Patent Owner contends that “‘remov[ing] a learned behavior,’ and ‘reload[ing] [a] configuration’ are vastly different concepts than the first instruction set being generated as a representation of a second instruction set.” PO Resp. 39 (citing Ex. 2007 ¶¶ 119–120). According to Patent Owner, “an instruction set that represents another instruction set . . . includes a more generalized instruction set that can be used more flexibly on multiple different types of devices.” *Id.* (citing Ex. 2007 ¶ 120). Patent Owner also contends that “a [person of ordinary skill in the art (“POSA”)] would have understood that a ‘reloaded configuration’ is the same configuration that is just reloaded, and has nothing to do with generating a first instruction as a representation of a second instruction.” PO Sur-reply 25.

Patent Owner’s arguments are unavailing. First, we are not persuaded by Patent Owner’s assertion that the phrase “one or more representations of a second one or more instruction sets” in claim 31 requires an instruction set that can be used on multiple different types of devices. Claim 31 recites “generating the first one or more instruction sets *for operating the first device* as one or more representations of a second one or more instruction sets *for operating the first device*.” Ex. 1001, 167:21–26 (emphasis added). Thus, claim 31 indicates that the first instruction set and the representation of the second instruction set are both for operating the same device. *Id.*

Second, Grotmol discloses that “[at] a given time, a user indication may be used to trigger an UNDO operation.” Ex. 1005, 34:22–23. Grotmol’s “UNDO operation may comprise loading of the previously saved configuration,” namely, “loading at time t_1 the configuration saved at time $t_0 < t_1$ ” so that “the robot controller effectively ‘forgets’ what it learned in time interval $t_0 < t < t_1$.” *Id.* at 34:23–27. Thus, Grotmol does not simply reload the same motor command. *See id.* Rather, Grotmol discloses generating the motor command at time t_1 so that it represents a different motor command from time t_0 . *Id.* at 34:22–27; Ex. 1010 ¶ 64.

29. Claim 32

Claim 32 depends from claim 4, and recites “wherein the first one or more digital pictures that depict the at least the portion of the first device’s surrounding include one or more digital pictures that depict a representation of the at least the portion of the first device’s surrounding.” Ex. 1001, 168:1–5. Grotmol discloses that the first image includes a representation of the first robot’s surrounding. Pet. 59–63; Ex. 1005, 7:60–63, 8:57–9:3, 9:41–52, 10:16–34, 24:31–25:5, 38:28–65, 40:55–63, Fig. 20A. Patent Owner does not dispute that Grotmol discloses the limitations of claim 32.

30. Claims 33 and 34

Claims 33 and 34 recite limitations similar to those discussed above for claim 1. Ex. 1001, 168:6–25. Petitioner relies on evidence similar to that discussed above for claim 1, which shows that Grotmol discloses the limitations of claims 33 and 34. Pet. 63–65. Patent Owner does not dispute that Grotmol discloses the limitations of claims 33 and 34.

31. Summary

For the foregoing reasons, Petitioner has shown by a preponderance of the evidence that claims 1–9, 11–14, 16–24, 26, 28, 29, and 31–34 are anticipated by Grotmol, but Petitioner has not shown by a preponderance of the evidence that claim 15 is anticipated by Grotmol.

III. CONCLUSION⁶

Petitioner has shown by a preponderance of the evidence that claims 1–9, 11–14, 16–24, 26, 28, 29, and 31–34 of the '583 patent are unpatentable. Petitioner has not shown by a preponderance of the evidence that claim 15 of the '583 patent is unpatentable.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–9, 11– 24, 26, 28, 29, 31–34	102	Grotmol	1–9, 11–14, 16–24, 26, 28, 29, 31–34	15

⁶ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

IV. ORDER

It is hereby

ORDERED that claims 1–9, 11–14, 16–24, 26, 28, 29, and 31–34 of the '583 patent are shown unpatentable;

FURTHER ORDERED that claim 15 of the '583 patent is not shown unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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Patent 11,055,583 B1

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