

Demonstratives of Patent Owner Autonomous Devices, LLC

Case No: IPR2023-01172/01173
USPTO Patent Trial and Appeal Board

Oral Hearing: October 3, 2024

'583 Patent: Disputed Issues

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'583 (-01172): Anticipation based on Grotmol (1/2)

- **Claim 7: Grotmol Does Not Disclose Detecting Objects and Comparing Detected Objects for Matching**
 - Claim 9: Grotmol Does Not Disclose the Claimed Second Learning Process
 - Claim 14: Grotmol Does Not Disclose the Claimed Modified and Applied Instruction Set and that the Second Device Performs an Operation Defined by the Modified Instruction Set
 - Claim 15: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets
 - Claim 16: Grotmol Does Not Disclose the Claimed Modifying of Digital Pictures and Matching Using the Modified Digital Pictures

'583: Grotmol Does Not Disclose All the Limitations of Claim 7

Claim 7

7. The system of claim 4, 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 ('583); Claim 7

- **“determining at least partial match between”**
 - objects detected in digital pictures

'583: Grotmol Does Not Disclose the Claimed Matching (Claim 7)

Petition

Grotmol discloses calculating a similarity measure between one or more portions of new and old images where the similarity measure may characterize similarity between features of the subset and features of the given training set and features may be used to “describe one or more integer or floating point values characterizing the input, e.g., the *presence or absence* of an *edge, corner, shape, texture, color, object*, at particular locations in the image, values of pixels in an image, patches of color texture, brightness in the image, and/or in the image as a

whole” Ex. 1005, 28:19-24; *id.*, 2:29-37; Decl. ¶ 238; *see supra* limitation [4.3] and claim 6.

Pet. [2] at 28-29

'583: Grotmol Does Not Disclose the Claimed Matching (Claim 7)

PO Response

Petitioner relies on Grotmol's comparison based on a similarity measure, which does not disclose the matching of objects in claim 7. Petition, 28-29. Using detected objects in the claimed matching *involves object detection and matching of the detected objects*, and Grotmol does not disclose any matching using detected objects. Ex. 2007, ¶¶75-76.

PO Resp. [28] at 13

'583: Grotmol Does Not Disclose the Claimed Matching (Claim 7)

Grotmol

features. The method may comprise, based on the comparison, determining a similarity measure for a given training set of the plurality of training feature sets. The similarity measure may characterize similarity between features of the subset and features of the given training set. The method may comprise, responsive to the similarity measure breaching a threshold, selecting one or more training sets from the plurality of training sets. The method may comprise deter-

Ex-1005 at 2:29-37

'583: Grotmol Does Not Disclose the Claimed Matching (Claim 7)

Grotmol

As used herein 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 edge, corner, shape, texture, color, object, at particular locations in the image, values of pixels in an image, patches of color texture, brightness in the image, and/or in the image as a whole;

Ex-1005 at 28:19-24

'583: Grotmol Does Not Disclose the Claimed Matching (Claim 7)

Sur-Reply

Petitioner argues that “Grotmol’s image features include detected objects such that, when Grotmol compares the features of a newly acquired image to stored image features to determine at least a partial match, the operation includes a comparison of detected objects to determine instruction sets for operating the robot.” Reply, 2. This argument is incorrect, conclusory, and unsupported by Grotmol’s disclosure. **First**, image features and their comparison in Grotmol are used to detect objects, *but once the objects are detected, Grotmol mentions nothing about matching of those detected objects.* **Second**, image features are inputs into an object detection and detected objects are outputs of the object detection, hence they are logically different. **Third**, image features are used to detect objects, but are not the detected objects themselves, and comparing image features is logically different than the recited matching of the resulting detected objects. *Patent Owner Response (Paper)*

'583: Grotmol Does Not Disclose the Claimed Matching (Claim 7)

Sur-Reply

Petitioner argues that Patent Owner's expert, Dr. Saber, conceded that Grotmol discloses object detection when performing feature extraction. Reply, 4. This argument is incorrect because Dr. Saber made clear at his deposition that "*an object is not really a feature*," Ex-1011, 28:4-5, and stated that Grotmol's "very general statement" regarding features "could have been more accurate." *Id.*, 29:6-7.

PO Sur-Reply [35] at 5

'583 (-01172): Anticipation based on Grotmol (1/2)

- Claim 7: Grotmol Does Not Disclose Detecting Objects and Comparing Detected Objects for Matching
- **Claim 9: Grotmol Does Not Disclose the Claimed Second Learning Process**
- Claim 14: Grotmol Does Not Disclose the Claimed Modified and Applied Instruction Set and that the Second Device Performs an Operation Defined by the Modified Instruction Set
- Claim 15: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets
- Claim 16: Grotmol Does Not Disclose the Claimed Modifying of Digital Pictures and Matching Using the Modified Digital Pictures

'583: Grotmol Does Not Disclose All the Limitations of Claim 9

Claim 9

- “**knowledgebase**”
 1. “second one or more digital pictures”
 2. “second one or more instruction sets”
 3. “second learning process”

9. The system of claim 4, 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 ('583); Claim 9

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Response

Grotmol fails to disclose the claimed “second learning process.” Ex. 2007, ¶¶78-81. Grotmol only discloses *one* user operating *one* device in *one* learning process, and therefore fails to disclose any second learning process, let alone the claimed “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.” *Id.*

PO Resp. [28] at 15

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Petition

Grotmol describes that multiple images may be acquired, with images respectively stored in association with corresponding motor commands issued at the time the image was acquired. Grotmol describes that multiple training processes can be conducted to learn multiple tasks. Ex. 1005, 24:17-67 (describing training of “simple tasks” and “complex tasks,” including behaviors such as “fetch” and “grasping.”); 26:1-20 (describing that “[t]he system may be configured to learn the *second* behavior from the user.”). Decl. ¶ 245.

Pet. [2] at 31

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Response

another learning process. Ex. 2007, ¶¶79-81. Since Grotmol discloses *only a single learning process, multiple tasks are learned in the single learning process. Nothing in Grotmol suggests that multiple tasks are learned in multiple learning processes as claimed in claim 9. Id.* Penninger's contention that Grotmol teaches

PO Resp. [28] at 15

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Sur-Reply

Petitioner's argument as to claim 9 is **new, and improper**, as discussed above in Section II. Here Petitioner incorrectly argues that Grotmol's **"multiple controllers"** disclose the claimed "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," as recited by claim 9, Reply, 5-6. However, nothing in Grotmol discloses that any of the separate controllers, or any combination of separate controllers, contain a single, mixed knowledgebase containing correlations of digital pictures and instruction sets learned in different learning processes, as required by claim 9. *Grotmol discloses one user operating*

PO Sur-Reply [35] at 6

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Sur-Reply

Grotmol discloses "multiple learning processes," Reply, 6. Petitioner's arguments are conclusory, and the cited portions of Grotmol merely disclose that a *single* user can train the task of playing fetch during a *single* learning process. Ex-1005, 24:17-26:39. Grotmol's disclosure *says nothing about a single, mixed knowledgebase that includes one correlation learned in one learning process and another correlation learned in another learning process.*

PO Sur-Reply [35] at 7

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Sur-Reply

Petitioner's argument that Grotmol's "hierarchical learning" framework discloses multiple learning processes is conclusory and wrong. Reply, 5-6. The portions of Grotmol cited by Petitioner only disclose that Grotmol uses high-level and low-level controllers to learn complex behaviors, which does not say anything about multiple learning processes. Ex-1005, 10:35-44; 24:17-27:17; Figure 10D. Petitioner's argument that a "first controller is trained in a first learning process" to control a robot to approach a target "while a second controller is trained in a second learning process to" control a robot to turn and grasp the target is conclusory and unsupported by Grotmol's disclosure. Reply, 7. Grotmol discloses that both of the behaviors cited by Petitioner are a part of a *single learning process involving a single user*, whereby a robot learns *a single task* involving fetching. Ex-1005, 25:30-26:34.

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Grotmol

Persistent switcher apparatus and methods are disclosed herein, in accordance with one or more implementations. Exemplary implementations may completely or partially alleviate this problem by using a hierarchy of behaviors and a stateful switcher. The switcher may learn what sensory contexts should be associated with changes in behavior, and what contexts shouldn't. The example task may then be trained with simple predictors based on the immediate visual input. Human operator knowledge about how to best divide a task in elementary behaviors may be leveraged.

Ex-1005 at 10:35-44

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Sur-Reply

Petitioner's argument that a "first controller is trained in a first learning process" to control a robot to approach a target "while a second controller is trained in a second learning process to" control a robot to turn and grasp the target is conclusory and unsupported by Grotmol's disclosure. Reply, 7. Grotmol discloses that both of the behaviors cited by Petitioner are a part of a *single learning process involving a single user*, whereby a robot learns *a single task* involving fetching. Ex-1005, 25:30-26:34.

PO Sur-Reply [35] at 7

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Grotmol

The user may have an ability to perform managing operations on “Behavior 1”. For example, the user may perform operations including one or more of change a name of a module, reset a module to naive state, revert a module to a particular point in history, delete a module, save/load locally, upload, download, and/or other operations. The user may change outputs and FE1. Such changes may depend on

Ex-1005 at 25:53-59

'583: Grotmol Does Not Disclose the Claimed Second Learning Process (Claim 9)

Sur-Reply

7-8. Dr. Saber testified that a first learning process and a second learning process can be performed by the same user on one device, Ex-1011, 38:18-39:2, *not* that Grotmol discloses the claimed first and second learning processes. Further, Dr. Saber testified that a “temporal separation” would be one factor in determining different learning processes and made clear that other factors also determine when different learning processes are occurring. Ex-1011, 50:11-17, 54:22-55:20.

PO Sur-Reply [35] at 9

'583 (-01172): Anticipation based on Grotmol (1/2)

- Claim 7: Grotmol Does Not Disclose Detecting Objects and Comparing Detected Objects for Matching
- Claim 9: Grotmol Does Not Disclose the Claimed Second Learning Process
- **Claim 14: Grotmol Does Not Disclose the Claimed Modified and Applied Instruction Set and that the Second Device Performs an Operation Defined by the Modified Instruction Set**
- Claim 15: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets
- Claim 16: Grotmol Does Not Disclose the Claimed Modifying of Digital Pictures and Matching Using the Modified Digital Pictures

'583: Grotmol Does Not Disclose All the Limitations of Claim 14

Claim 14

- “first one or more instruction sets”

1. “modified”
2. “applied to the second device”
3. second device is caused to perform operations defined by the modified first instruction set

14. The system of claim 4, 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 ('583); Claim 14

'583: Grotmol Does Not Disclose All the Elements of Claim 14

Response

Grotmol first fails to disclose that a first one or more instruction sets is “modified.” Ex. 2007, ¶¶82-85. Grotmol only discloses **correcting device behavior by issuing new commands** in certain instances and does not disclose that any instruction sets are *modified*. Ex. 2007, ¶¶83-85. 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, Petition 36 (citing Ex. 1005, 42:46-43:3). But issuing *new* commands based on shifted images does not disclose modifying instruction sets, as required by claim 14. Ex. 2007, ¶¶83-85. *Grotmol does not modify the new commands, and issuing new unmodified commands is fundamentally different than modifying existing instruction sets* in claim 14.

PO Resp. [28] at 17

'583: Grotmol Does Not Disclose the Claimed Modifying (Claim 14)

Grotmol

Exemplary implementations of the methodology described herein may be applicable to controlling trajectory of a robotic device due to (i) position mismatch (e.g., the robot being located physically to the left of a target location); and/or (ii) due to orientation mismatch (e.g., the robot being in the same physical location while oriented towards the left of the target trajectory). To illustrate, assuming the camera faces straight ahead, the center of the image may be the spot which the robot is headed towards. Thus, if this spot is to the left of the spot where the robot is supposed to be headed towards (as defined by the camera image seen during training), then the robot may need to adjust its heading rightwards.

Ex-1005 at 42:46-58

'583: Grotmol Does Not Disclose All the Elements of Claim 14

Response

Petitioner's contention that "when a training configuration is loaded into a second physical device . . . and the second robot encounters 'position mismatch' or 'orientation mismatch' from the first robot, the instruction set is shifted," Petition, 36, is wrong. This statement is Petitioner's own words, not supported in Grotmol, and is conclusory. Ex. 2007, ¶85. Grotmol discloses **shifting images**, including where "FIG. 20B illustrates using image shift and/or crop for determining image match," Ex. 1005, 6:26-28, not modifying instruction sets. Ex. 2007, ¶85. As discussed above, Grotmol never discloses modifying any instruction set, and thus nothing in Grotmol discloses that *an instruction that Grotmol fails to disclose as modified is somehow applied to a second device as modified, and that an operation defined by that instruction set that Grotmol fails to disclose as modified would be performed on the second device*, as required by claim 14. Ex. 2007, ¶85.

'583: Grotmol Does Not Disclose All the Elements of Claim 14

Sur-Reply

Petitioner points to Grotmol's disclosure of combining motor commands with the output of a PID controller to stabilize the robot as disclosure of a modified instruction set. Reply, 10. But this combination of motor commands in Grotmol does not relate to modifying instruction sets. Figure 4A, cited by Petitioner (Reply, 10), only discloses that "corrector 412, predictor 422 and the combiner 414 may cooperate to produce a control signal 420." Ex-1005, 15:26-28. Petitioner's attempt to equate control signal 420 with a modified instruction set is not supported by Grotmol's disclosure. And the testimony of Dr. Saber cited by Petitioner only states that the output of the combiner in Grotmol is modified, not that any instruction set in a training set is modified in Grotmol. Ex-1011, 60:18-61:9. *Petitioner's argument*

PO Sur-Reply [35] at 10

'583: Grotmol Does Not Disclose All the Elements of Claim 14

Sur-Reply

Petitioner also contends that Grotmol discloses that “[w]hen a trained configuration learned by operating a first robot is loaded on and run by a second robot, the second robot modifies the motor commands (instruction sets) from the first robot by combining them with the output of the second robot’s PID controller.”

Reply, 11. This argument is conclusory and not supported in Grotmol. First, 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. Second, as discussed above, *Grotmol never discloses modifying any instruction set since combining is different than modifying*. Thus, nothing in Grotmol discloses or suggests (i) that a modified instruction set is applied to a second device, and (ii) that an operation defined by the modified instruction set would be performed on the second device, as required by claim 14. Ex-2007, ¶85. Additionally, Petitioner never argues nor even addresses

'583 (-01172): Anticipation based on Grotmol (1/2)

- Claim 7: Grotmol Does Not Disclose Detecting Objects and Comparing Detected Objects for Matching
- Claim 9: Grotmol Does Not Disclose the Claimed Second Learning Process
- Claim 14: Grotmol Does Not Disclose the Claimed Modified and Applied Instruction Set and that the Second Device Performs an Operation Defined by the Modified Instruction Set
- **Claim 15: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets**
- Claim 16: Grotmol Does Not Disclose the Claimed Modifying of Digital Pictures and Matching Using the Modified Digital Pictures

'583: Grotmol Does Not Disclose All the Limitations of Claim 15

Claim 15

1. Modifying the first one or more instruction sets
2. Determining the modified first instruction set
3. Causing the first or second device to perform an operation defined by the modified first instruction set

15. The system of claim 4, wherein the machine readable code, when executed by the one or more processors, causes the one or more processors to further perform at least:
modifying:
the first one or more instruction sets for operating the first device, or

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

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

Ex-1001 ('583); Claim 15

'583: Grotmol Does Not Disclose All the Limitations of Claim 15

Response

Grotmol first fails to disclose “modifying: the first one or more instruction sets for operating the first device” Ex. 2007, ¶¶86-93. Grotmol only discloses **correcting device behavior** by issuing new commands in certain instances and does not disclose that any instruction sets are *modified*. Ex. 2007, ¶¶87-92. Petitioner points to Grotmol’s disclosure of controlling a robot’s trajectory to compensate for position and orientation mismatch and that new commands may be issued based on shifted images, Petition 37 (citing Ex. 1005, 42:46-43:3). But issuing *new* commands based on shifted images does not disclose modifying instruction sets, as required by claim 15. Ex. 2007, ¶¶87-88. *Grotmol does not modify the new*

PO Resp. [28] at 19

'583: Grotmol Does Not Disclose the Claimed Modifying (Claim 15)

Grotmol

Exemplary implementations of the methodology described herein may be applicable to controlling trajectory of a robotic device due to (i) position mismatch (e.g., the robot being located physically to the left of a target location); and/or (ii) due to orientation mismatch (e.g., the robot being in the same physical location while oriented towards the left of the target trajectory). To illustrate, assuming the camera faces straight ahead, the center of the image may be the spot which the robot is headed towards. Thus, if this spot is to the left of the spot where the robot is supposed to be headed towards (as defined by the camera image seen during training), then the robot may need to adjust its heading rightwards.

Ex-1005 at 42:46-58

'583: Grotmol Does Not Disclose All the Limitations of Claim 15

Response

Petitioner next points to Grotmol's disclosure that commands from the training sets may be combined with the output from a PID controller as disclosing the claimed modifying instruction sets. Petition, 38 (quoting Ex. 1005, 43:9-11). But Grotmol's disclosure of combining motor commands with the output of a PID controller to stabilize the robot does not disclose modifying instruction sets. Ex. 2007, ¶¶88-89. The motor commands, or instruction sets, are *never themselves modified but instead are only combined* with the output of a PID controller in Grotmol. *Id.* Combining two distinct elements is different than modifying either element itself. *Id.* Therefore, Petitioner has failed to establish that the instruction sets in Grotmol's training sets are actually modified or changed.

PO Resp. [28] at 20

'583: Grotmol Does Not Disclose All the Limitations of Claim 15

Response

Further, since Grotmol merely discloses changing a device's operation by *executing alternate, whole, unmodified instructions*, a POSA reading Grotmol's disclosure would not have understood that the modified and determined instruction set was used to cause an operation defined by that modified instruction set. Ex. 2007, ¶¶92-93. Grotmol never discloses modifying any instruction sets, and thus nothing in Grotmol would have led a POSA to understand that *an instruction that Grotmol fails to disclose as modified is somehow determined as modified, and that an operation defined by that instruction set that Grotmol fails to disclose as modified would be performed*, as required by claim 15.

PO Resp. [28] at 22

'583: Grotmol Does Not Disclose the Claimed Modifying (Claim 15)

metric by the control process of the robot. The steering signal (which may be adjusted leftwards or rightwards) may be selected as the control variable for the process. A negative

Ex-1005 at 42:64-66

Grotmol

output. In some implementations, the trainer's input and the predicted control may be configured in "delta" space wherein the controllable parameter (e.g., correction **408** in FIG. 4A) may be used to modify the existing state of the system (e.g., comprising motor torque and/or robot platform acceleration) rather than indicating a target value (setpoint).

Ex-1005 at 35:55-60

'583: Grotmol Does Not Disclose All the Limitations of Claim 15

Sur-Reply

Petitioner contends for the first time in its Reply 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.” Reply, 14. This argument is wrong, is a new argument Petitioner did not present in the Petition, and should be refused consideration. *See Allsteel Inc.*, IPR2015-01691, *2. Further, Grotmol’s disclosure of “combining” is not the claimed “modifying” for the reasons discussed above and in the Response. Response, 18-23. And Grotmol’s disclosure of processing control signal 420 cited by Petitioner, Reply, 14-15, says nothing about the claimed “determining the modified the first one or more instruction sets for operating the first device” as required by claim 15. None of Grotmol’s processing, adapting, scaling, or translating motor control signal 420 actually *determine* a modified instruction set.

'583 (-01172): Anticipation based on Grotmol (1/2)

- Claim 7: Grotmol Does Not Disclose Detecting Objects and Comparing Detected Objects for Matching
- Claim 9: Grotmol Does Not Disclose the Claimed Second Learning Process
- Claim 14: Grotmol Does Not Disclose the Claimed Modified and Applied Instruction Set and that the Second Device Performs an Operation Defined by the Modified Instruction Set
- Claim 15: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets
- **Claim 16: Grotmol Does Not Disclose the Claimed Modifying of Digital Pictures and Matching Using the Modified Digital Pictures**

'583: Grotmol Does Not Disclose All the Limitations of Claim 16

Claim 16

1. Modifying the first one or more digital pictures
2. Using the modified first one or more digital pictures in matching

16. The system of claim 4, wherein the machine readable code, when executed by the one or more processors, causes the one or more processors to further perform at least: 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

Ex-1001 ('583); Claim 16

'583: Grotmol Does Not Disclose All the Limitations of Claim 16

Response

Petitioner has not pointed to anything in Grotmol to show a *modified digital picture used in a matching process*. Ex. 2007, ¶¶96-97. Petitioner claims that “Grotmol discloses determining whether there is a partial match between the new image and modified first image,” Petition, 40. This is Petitioner’s own words not supported in Grotmol, and is conclusory. Grotmol itself never discloses matching using *any* modified images as required by claim 16. Ex. 2007, ¶¶96-97.

PO Resp. [28] at 24

'583: Grotmol Does Not Disclose All the Limitations of Claim 16

Grotmol

During training, images (e.g., raw and/or pre-processed) may be stored in a memory buffer (training buffer). In one or more implementations, preprocessing operations may comprise resampling, cropping, light balancing, and/or feature extraction. Motor commands issued by a trainer corresponding to time instances when the images are acquired may be stored. Additional sensory information (e.g., vehicle motion information, ambient environment information, vehicle operational parameters) corresponding to time instances when the images are acquired may be stored.

Ex-1005 at 39:13-22

'583: Grotmol Does Not Disclose All the Limitations of Claim 16

Grotmol

than the quantity of features within the set of features. The method may comprise, based on the comparison, determining a similarity measure for a given training set of the plurality of training feature sets. The similarity measure may characterize similarity between features of the subset and features of the given training set. The method may comprise, responsive to the similarity measure breaching a threshold, selecting one or more training sets from the plurality of training sets. The method may comprise determining one or

Ex-1005 at 4:30-38

'583 (-01172): Anticipation based on Grotmol (2/2)

- **Claim 17: Grotmol Does Not Disclose the Claimed Modifying Digital Pictures, Learning the Modified Digital Pictures, and Determining Instruction Sets Using the Modified Digital Pictures**
 - Claim 18: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Learning the Modified Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets
 - Claim 23: Grotmol Does Not Disclose the Claimed Connections
 - Claim 29: Grotmol Does Not Disclose the Claimed Detecting of Objects, Generating Representations of the Detected Objects, and Generating New Digital Pictures from the Representations of the Detected Objects
 - Claim 31: Grotmol Does Not Disclose the Claimed One Instruction Set Being a Representation of Another Instruction Set

'583: Grotmol Does Not Disclose All the Limitations of Claim 17

Claim 17

- “first one or more digital pictures”
 1. “modifying”
 2. “learning”
 3. “determining” using “partial match” with modified digital picture

17. The system of claim 4, wherein the machine readable code, when executed by the one or more processors, causes the one or more processors to further perform at least:

modifying:

the first one or more digital pictures, or

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

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

Ex-1001 ('583); Claim 17

'583: Grotmol Does Not Disclose All the Limitations of Claim 17

Response

Grotmol fails to disclose “modifying: the first one or more digital pictures,” learning the modified digital picture, and determining an instruction set using the modified digital picture. Ex. 2007, ¶¶98-102. Petitioner points to Grotmol’s disclosure of preprocessing images and scaling pixels. Petition, 39-40 (citing Ex. 1005, 39:13-22 and 4:18-22). But this disclosure and Grotmol’s disclosures cited in the Petition only disclose that an instance of an image may be scaled or transformed, and not that the scaled or transformed image is learned and then used in a matching. Ex. 2007, ¶¶99-102. Claim 17 *requires (i) modifying a digital picture, (ii) learning the modified digital picture, and (iii) using this modified digital picture in a matching, and Grotmol fails to disclose the latter two elements. Id.*

PO Resp. [28] at 26

'583: Grotmol Does Not Disclose All the Claim Limitations of Claim 17

Grotmol

During training, images (e.g., raw and/or pre-processed) may be stored in a memory buffer (training buffer). In one or more implementations, preprocessing operations may comprise resampling, cropping, light balancing, and/or feature extraction. Motor commands issued by a trainer corresponding to time instances when the images are acquired may be stored. Additional sensory information (e.g., vehicle motion information, ambient environment information, vehicle operational parameters) corresponding to time instances when the images are acquired may be stored.

Ex-1005 at 39:13-22

'583: Grotmol Does Not Disclose All the Limitations of Claim 17

Response

Dr. Janet confirmed that the modified digital picture must be the correlated digital picture in claim 17. Ex. 2008, 45:2-22. In addition, he could not point to a specific place in Grotmol that discloses a digital picture correlated with an instruction set that is modified. *Id.*, 48:5-49:17.

Dr. Janet attempted to supplement his opinions regarding claim 17 at his deposition by claiming that opinions he had not explicitly disclosed were somehow still contained in his declaration, but that is inappropriate, particularly because the Petition does not rely on them. *See* Ex. 2008, 48:17-49:17. That detracts from his credibility for claim 17.

PO Resp. [28] at 28

'583 (-01172): Anticipation based on Grotmol (2/2)

- Claim 17: Grotmol Does Not Disclose the Claimed Modifying Digital Pictures, Learning the Modified Digital Pictures, and Determining Instruction Sets Using the Modified Digital Pictures
- **Claim 18: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Learning the Modified Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets**
- Claim 23: Grotmol Does Not Disclose the Claimed Connections
- Claim 29: Grotmol Does Not Disclose the Claimed Detecting of Objects, Generating Representations of the Detected Objects, and Generating New Digital Pictures from the Representations of the Detected Objects
- Claim 31: Grotmol Does Not Disclose the Claimed One Instruction Set Being a Representation of Another Instruction Set

'583: Grotmol Does Not Disclose All the Limitations of Claim 18

Claim 18

- “first one or more instruction sets”
 1. “modifying”
 2. “learning”
 3. “determining” using “partial match” with modified instruction sets
 4. “causing operations”

18. The system of claim 4, wherein the machine readable code, when executed by the one or more processors, causes the one or more processors to further perform at least:

modifying:

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 first one or more instruction sets for operating the first device, or

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

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

'583: Grotmol Does Not Disclose All the Limitations of Claim 18

Response

Grotmol first fails to disclose “modifying: the first one or more instruction sets for operating the first device.” Ex. 2007, ¶¶103-110. Grotmol only discloses correcting device behavior by issuing new commands in certain instances and does not disclose that any instruction sets are *modified*. Ex. 2007, ¶¶104-110. Petitioner points to Grotmol’s disclosure of controlling a robot’s trajectory to compensate for position and orientation mismatch and that new commands may be issued based on shifted images, Petition 43-44 (citing Ex. 1005, 42:46-43:3). But issuing *new* commands based on shifted images does not disclose modifying instruction sets, as required by claim 18. Ex. 2007, ¶¶104-106. *Grotmol does not modify the new commands, and issuing new unmodified commands is fundamentally different than modifying existing instruction sets* in claim 18. *Therefore, Petitioner has not*

PO Resp. [28] at 29

'583: Grotmol Does Not Disclose the Claimed Modifying (Claim 18)

Grotmol

Exemplary implementations of the methodology described herein may be applicable to controlling trajectory of a robotic device due to (i) position mismatch (e.g., the robot being located physically to the left of a target location); and/or (ii) due to orientation mismatch (e.g., the robot being in the same physical location while oriented towards the left of the target trajectory). To illustrate, assuming the camera faces straight ahead, the center of the image may be the spot which the robot is headed towards. Thus, if this spot is to the left of the spot where the robot is supposed to be headed towards (as defined by the camera image seen during training), then the robot may need to adjust its heading rightwards.

Ex-1005 at 42:46-58

'583: Grotmol Does Not Disclose All the Limitations of Claim 18

Response

Petitioner next points to Grotmol's disclosure that commands from the training sets may be combined with the output from a PID controller as disclosing the claimed modifying instruction sets. Petition, 44 (quoting Ex. 1005, 43:5-11). But Grotmol's disclosure of combining motor commands with the output of a PID controller to stabilize the robot does not disclose modifying instruction sets. Ex. 2007, ¶¶105-106. The motor commands, or instruction sets, are *never themselves modified but instead are only combined* with the output of a PID controller in Grotmol. *Id.* Combining two distinct elements is different than modifying either element itself. *Id.* Petitioner has failed to establish that the instruction sets in Grotmol's training sets are actually modified or changed.

PO Resp. [28] at 30

'583: Grotmol Does Not Disclose the Claimed Modifying (Claim 18)

Grotmol

A PID controller may be used in order to reduce/maintain the error metric during operation of the robot. In some implementations, 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. Those motor commands may be combined with the output from the PID controller in order to stabilize operation of the robot.

Ex-1005 at 43:4-11

'583: Grotmol Does Not Disclose All the Limitations of Claim 18

Response

Grotmol next fails to disclose the claimed “learning the first one or more digital pictures correlated with the modified the first one or more instruction sets for operating the first device.” Ex. 2007, ¶¶107-110. Since Grotmol fails to disclose modifying an instruction set as discussed above, it also fails to disclose learning the modified instruction set, and especially learning the modified instruction set correlated with a digital picture as required by claim 18. *Id. Grotmol does not disclose learning any modified instruction set* and Petitioner does not point to anything in Grotmol that discloses this element of claim 18.

Grotmol further fails to disclose “determining the modified the first one or more instruction sets for operating the first device.” Ex. 2007, ¶¶108-110. As just discussed, since Grotmol does not disclose that the learned instruction sets are modified, Grotmol cannot and does not disclose that a *learned modified instruction set is determined* as required by claim 18. *Id.*

'583: Grotmol Does Not Disclose All the Limitations of Claim 18

Response

Grotmol finally fails to disclose “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.” Ex. 2007, ¶110. 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. Petition, 46. The 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*. As discussed above, since Grotmol never discloses

PO Resp. [28] at 32

'583: Grotmol Does Not Disclose All the Limitations of Claim 18

Sur-Reply

Petitioner's argument that "[r]eplacing one motor command in an instruction set with another motor command in the instruction set necessarily modifies the instruction set, much like the roster of a sports team is modified when players are traded to other teams," Reply, 21, is Petitioner's own words and is wrong. First, Grotmol does not disclose that motor commands in instruction sets are replaced in override mode, *but that a whole, unmodified command is fully replaced by another command*, Ex-1005, 23:13-22. Further, under Petitioner's example, while trading players from one team to another may modify the original team's roster, the players themselves, which are analogous here to the claimed instruction sets, are not modified but remain unchanged. Replacing an element with another element is fundamentally different than modifying the original element. Ex-2007, ¶¶106-107.

Override Mode

'583: Grotmol Does Not Disclose All the Limitations of Claim 18

Sur-Reply

Petitioner's final argument regarding claim 18, that Grotmol's correct mode discloses the features of claim 18, is also wrong. Reply, 22. Petitioner's statement that Grotmol's "correct mode involves determining a modified instruction based on both the robot's known instruction and the teacher's new instruction," *id.*, is wholly unsupported attorney argument. Grotmol's correct mode discloses "sum[ming] the teacher's command with what the robot already knows to get a final motor command," Ex-1005, 23:23-29, not modifying any commands themselves. Adding

Correct Mode

PO Sur-Reply [35] at 19

'583 (-01172): Anticipation based on Grotmol (2/2)

- Claim 17: Grotmol Does Not Disclose the Claimed Modifying Digital Pictures, Learning the Modified Digital Pictures, and Determining Instruction Sets Using the Modified Digital Pictures
- Claim 18: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Learning the Modified Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets
- **Claim 23: Grotmol Does Not Disclose the Claimed Connections**
 - Claim 29: Grotmol Does Not Disclose the Claimed Detecting of Objects, Generating Representations of the Detected Objects, and Generating New Digital Pictures from the Representations of the Detected Objects
 - Claim 31: Grotmol Does Not Disclose the Claimed One Instruction Set Being a Representation of Another Instruction Set

'583: Grotmol Does Not Disclose All the Limitations of Claim 23

Claim 23

23. The system of claim 4, 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 ('583); Claim 23

- “first one or more digital pictures connected, using at least one or more connections, with the first one or more instruction sets”

'583: Grotmol Does Not Disclose the Claimed Connections (Claim 23)

Response

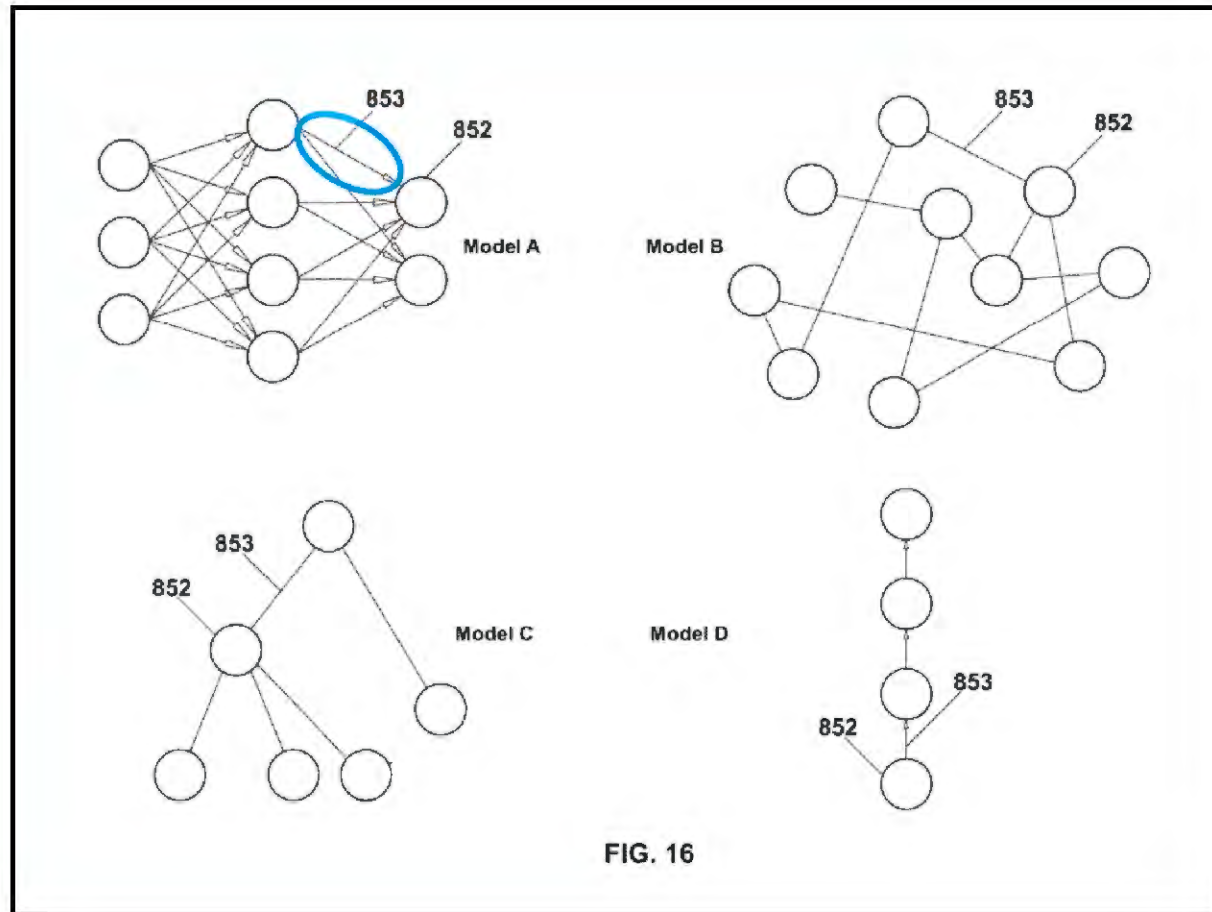
As discussed above, in the context of the '583 patent, including in light of the claims, specification, and drawings, a “connection” should be construed as a “relationship that includes a link.” *Supra* Section V.A; Ex. 2007, ¶¶53-59.

PO Resp. [28] at 34

Patent Owner proposes construing connection.

“relationship that includes a link”

'583: Grotmol Does Not Disclose the Claimed Connections (Claim 23)

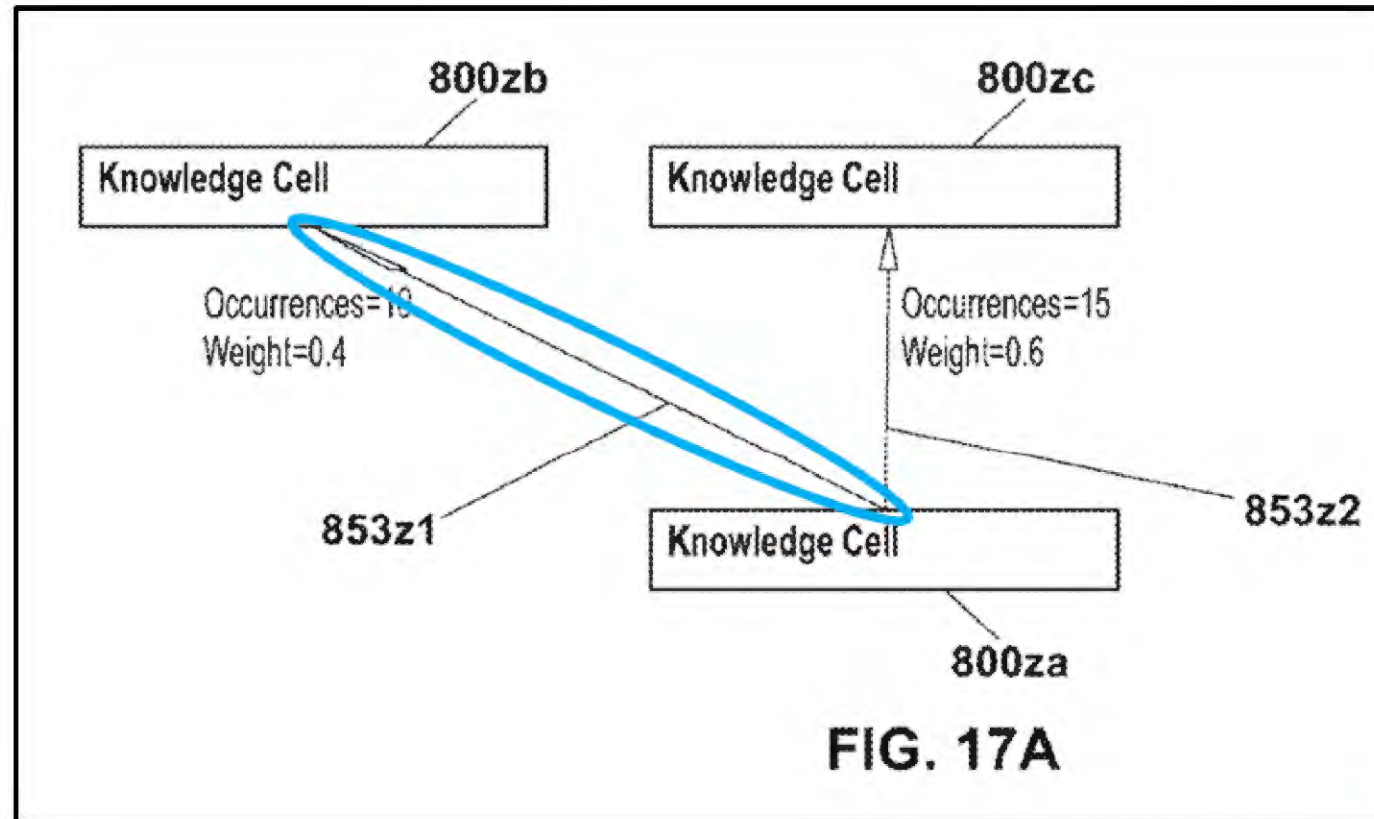


...omolities may include a network of Nodes **852** (also referred to as neurons, etc.) and Connections **853** similar to that of a brain. Node **852** can store any data, object, data structure, and/or other item, or reference thereto. Node **852**

Ex-1001 ('583) at FIG.16, 96:5-8

'583: Grotmol Does Not Disclose the Claimed Connections (Claim 23)

edge of a device's operation in visual surroundings. Knowledge cells may be connected, interrelated, or interlinked into knowledge structures using statistical, artificial intelligence, machine learning, and/or other models or techniques. Such interconnected or interrelated knowledge cells can be used



'583: Grotmol Does Not Disclose the Claimed Connections (Claim 23)

Sur-Reply

Phillips v. AWH Corp., 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc). Further, Petitioner's over-broad proposal for the alleged plain and ordinary meaning of "connection" as "an association or relationship," Reply, 23, contradicts the intrinsic record and *would effectively render the term meaningless since the "connection" in claim 23 is recited to narrow the word "correlated" recited in independent claim 1.*

PO Sur-Reply [35] at 20

'583: Grotmol Does Not Disclose the Claimed Connections (Claim 23)

Sur-Reply

Petitioner argues that Grotmol's association between an image and an action is a connection. Reply, 24. This argument is incorrect because Grotmol discloses that an image is only related to the motor control command, not that the image is connected including a specific connection or link. Response, 34. This confirms that Grotmol fails to disclose the claimed connections under the proper construction of that term.

PO Sur-Reply [35] at 22

'583 (-01172): Anticipation based on Grotmol (2/2)

- Claim 17: Grotmol Does Not Disclose the Claimed Modifying Digital Pictures, Learning the Modified Digital Pictures, and Determining Instruction Sets Using the Modified Digital Pictures
- Claim 18: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Learning the Modified Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets
- Claim 23: Grotmol Does Not Disclose the Claimed Connections
- **Claim 29: Grotmol Does Not Disclose the Claimed Detecting of Objects, Generating Representations of the Detected Objects, and Generating New Digital Pictures from the Representations of the Detected Objects**
- Claim 31: Grotmol Does Not Disclose the Claimed One Instruction Set Being a Representation of Another Instruction Set

'583: Grotmol Does Not Disclose the Limitations of Claim 29

Claim 29

29. The system of claim 4, 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 ('583); Claim 29

- **3 Step Process**

1. Detecting one or more objects
2. Generating one or more representations of the one or more objects
3. Generating one or more digital pictures that include the one or more representations of the one or more objects

'583: Grotmol Does Not Disclose the Limitations of Claim 29

Response

First, Grotmol fails to disclose “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.” Ex. 2007, ¶¶114-118. Grotmol discloses simply *capturing images (that happen to have some objects depicted therein) by a camera* and not the specifically recited detecting of objects outside of or in addition to capturing the image to then use the detected objects in generating the new image. Ex. 2007, ¶¶115-118. While Petitioner points to Grotmol’s generic disclosure of object detection and recognition, Petition, 59, and that images may generally comprise representations of objects, *id.*, object detection and recognition and object representations are not used to generate a new digital picture as required by claim 29. The detected objects in claim 29 are separate entities from the new generated

Grotmol fails to disclose Step 1 of Claim 29.

PO Resp. [28] at 35

'583: Grotmol Does Not Disclose the Limitations of Claim 29

Response

Grotmol also fails to disclose “generating the new one or more digital pictures includes: generating one or more representations of the one or more objects”. Ex. 2007, ¶¶116-118. “Generating one or more representations of the one or more objects” in claim 29 refers to the “one or more objects” detected in the prior step of “detecting one or more objects in the first device’s surrounding or the second device’s surrounding,” which Grotmol does not disclose as discussed above. *Id.* Thus, Grotmol cannot and does not disclose generating one or more representations of the detected one or more objects that Grotmol has not disclosed. *Id.* *Petitioner’s*

PO Resp. [28] at 36

Grotmol fails to disclose Step 2 of Claim 29.

'583: Grotmol Does Not Disclose the Limitations of Claim 29

Response

Finally, Grotmol fails to disclose “generating the new one or more digital pictures includes: generating the new one or more digital pictures that include the one or more representations of the one or more objects.” Ex. 2007, ¶¶117-118. “Generating the new one or more digital pictures that include the one or more representations of the one or more objects” refers to the “one or more representations of the one or more objects” generated in the prior step of “generating one or more representations of the one or more objects,” which Grotmol does not disclose as discussed above. *Id.* Thus, Grotmol cannot and does not disclose generating the new

Grotmol fails to disclose Step 3 of Claim 29.

PO Resp. [28] at 37

'583: Grotmol Does Not Disclose the Limitations of Claim 29

Sur-Reply

Petitioner's contention that "PO mischaracterizes claim 29 in arguing that it requires a causal chain of 'detect[ing] objects in [the] images in order to generate representations of the detected objects in order to then generate a new digital picture,'" Reply, 25, is Petitioner's mischaracterization. Claim 29 specifically

recites the causal chain in each claim section: (i) "detecting one or more objects," (ii) "generating one or more representations of the [detected] one or more objects" (note the "the one or more objects" referring to the detected one or more objects), and (iii) "generating the new one or more digital pictures that include the [generated] one or more representations of the [detected] one or more objects" (note the two

PO Sur-Reply [35] at 22-23

'583: Grotmol Does Not Disclose the Limitations of Claim 29

Sur-Reply

Petitioner argues that generating digital picture 2010 in Grotmol discloses the claimed invention of claim 29, but this argument is conclusory, unsupported by Grotmol, and was not made in the Petition (thus it should not be considered). Reply, 26-27. Petitioner's argument that "new digital picture 2010 includes representations of the earlier detected objects, and generating the new digital picture 2010 includes generating representations (e.g., depictions) of the objects in the digital picture 2010," Reply, 27, is a misleading statement entirely unsupported by Grotmol. The portions of Grotmol cited by Petitioner *never state or even imply that object representations generated based on objects detected in previous image 2000 are included or used to generate picture 2010. Id.*

PO Sur-Reply [35] at 24

'583 (-01172): Anticipation based on Grotmol (2/2)

- Claim 17: Grotmol Does Not Disclose the Claimed Modifying Digital Pictures, Learning the Modified Digital Pictures, and Determining Instruction Sets Using the Modified Digital Pictures
- Claim 18: Grotmol Does Not Disclose the Claimed Modifying Instruction Sets, Learning the Modified Instruction Sets, Determining the Modified Instruction Sets, and Causing Operations Based on the Modified Instruction Sets
- Claim 23: Grotmol Does Not Disclose the Claimed Connections
- Claim 29: Grotmol Does Not Disclose the Claimed Detecting of Objects, Generating Representations of the Detected Objects, and Generating New Digital Pictures from the Representations of the Detected Objects
- **Claim 31: Grotmol Does Not Disclose the Claimed One Instruction Set Being a Representation of Another Instruction Set**

'583: Grotmol Does Not Disclose All the Limitations of Claim 31

Claim 31

31. The system of claim 4, 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 ('583); Claim 31

'583: Grotmol Does Not Disclose the Limitations of Claim 31

Response

~~represents another instruction set.~~ For example, an instruction set that represents another instruction set in claim 31 includes a more generalized instruction set that can be used more flexibly on multiple different types of devices. Ex. 2007, ¶120. Grotmol's disclosure of simply obtaining an instruction set executed by the robot does not even contemplate, let alone disclose *another instruction set that is a representation of the original instruction set.*

PO Resp. [28] at 39

'583: Grotmol Does Not Disclose the Limitations of Claim 31

Sur-Reply

Petitioner argues that a reloaded configuration in Grotmol “includes a first one or more instruction sets at time t1 that represents the prior configuration including the second one or more instruction sets of the robot at time t0.” Reply, 27. This statement is conclusory, is unsupported in Grotmol, and is illogical. *A “reloaded configuration” is the same configuration that is just reloaded, which is vastly different from generating a first instruction set as a representation of a second instruction set.* Ex-2007, ¶¶119-120. In fact, Petitioner’s “reloaded configuration” does not suggest in any way that one instruction set represents another instruction set.

PO Sur-Reply [35] at 24-25

'583 Patent: Disputed Issues

<i>IPR2023-01172</i>		
<i>Ground 1</i>	Anticipation of Claims 7, 9, 14-18, 23, 29 and 31 based on Grotmol	Slides 3-75
<i>IPR2023-01173</i>		
<i>Ground 1</i>	Obviousness of Claims 10-11 based on Grotmol in view of the knowledge of a POSA	Slides 77-103
<i>Ground 2</i>	Obviousness of Claims 25 and 27 based on Grotmol in view of Hickman	Slides 104-124
<i>Ground 3</i>	Obviousness of Claim 30 based on Grotmol in view of Hoffman	Slides 125-133

- **Claim 10: Grotmol Does Not Disclose or Suggest the Claimed Second Learning Process and Second User**
 - Claim 11: Grotmol Does Not Disclose or Suggest the Claimed Second Learning Process and Third Device

Claim 10

- “knowledgebase”
 1. “second learning process”
 2. “second user”

10. The system of claim 4, 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 a second user.

Ex-1001 ('583); Claim 10

'583: Grotmol Does Not Disclose or Suggest Claim 10

correlations. Ex. 1005, 23:3-11, 39:13-22; Decl. ¶¶ 193-196, 340. Furthermore, Grotmol discloses that multiple learning processes can be done to train multiple behaviors for the robot, including “simple tasks” and “complex tasks.” Ex. 1005 24:17-67, 26:1-20. Grotmol does not limit the number of users that can train the multiple behaviors for the robot, and a POSITA would have understood that different users can train different behaviors, particularly given that Grotmol describes the training of both simple and complex tasks. Decl. ¶ 341. *It would have been obvious*

Pet. [2] at 24-25

Petitioner argues:

- “second learning process” – disclosed
- “second user” – obvious

'583: Grotmol Does Not Disclose or Suggest Claim 10

Response

Grotmol in view of the knowledge of a POSA fails to disclose or suggest the claimed “second user” and “second learning process.” Ex. 2007, ¶¶123-130. Grotmol only discloses *one* user operating *one* device in *one* learning process, *id.*, and therefore fails to disclose any second learning process or second user, let alone the claimed “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 a second user.*” Ex. 1001, Claim 10 (emphasis added).

PO Resp. [27] at 11

'583: Grotmol Does Not Disclose or Suggest Claim 10

Response

Petitioner contends that “Grotmol does not limit the number of users that can train the multiple behaviors for the robot, and a POSITA would have understood that different users can train different behaviors, particularly given that Grotmol describes the training of both simple and complex tasks.” Petition, 25. However, the inquiry here is not whether multiple learning processes can or cannot be conducted, but rather is about the single learning process that Grotmol actually discloses. Also, the foregoing statement is Petitioner’s own words, not supported in Grotmol, and is conclusory. Petitioner is wrong since Grotmol discloses *only a single user; thus this single user performs the “training of both simple and complex tasks.” Nothing in Grotmol suggests that one user trains the robot for simple tasks and another user trains the robot for complex tasks.* Ex. 2007, ¶¶126-130. Petitioner’s contention that

'583: Grotmol Does Not Disclose or Suggest Claim 10

Dr. Saber's Declaration

129. In my opinion, moreover, using different users with a device in different learning processes to learn mixed knowledge into a single knowledgebase would not have been straightforward or unusually simple to a POSA due to the complexities of combining the mixed knowledge into a single knowledgebase.

Ex-2007 at ¶ 129

'583: Grotmol Does Not Disclose or Suggest Claim 10

Dr. Saber's Declaration

130. Enabling a system to learn mixed autonomous operation knowledge and integrate such knowledge into a single knowledgebase in different learning processes with different users is an approach not disclosed or suggested in Grotmol and not obvious to a POSA in my opinion. For example, this approach may involve combining the learned knowledge into a coherent knowledge structure, identifying each user to store particular learned operations and preferences in portions of the knowledgebase for user-specific autonomous operations, combining the learned knowledge from specific users, and/or other issues not found in Grotmol and not obvious to a POSA.

Ex-2007 at ¶ 130

'583: Grotmol Does Not Disclose or Suggest Claim 10



Common knowledge of a POSA may only be used to supply a missing claim limitation when that limitation is “unusually simple and the technology particularly straightforward.”

Arendi S.A.R.L. v. Apple Inc., 832 F.3d 1355, 1361 (Fed. Cir. 2016)

'583: Grotmol Does Not Disclose or Suggest Claim 10

Sur-Reply

be refused consideration as discussed above in Section II. Petitioner's argument is also wrong since nothing in Grotmol discloses that any of the separate controllers, or any combination of separate controllers, contain a single, mixed knowledgebase containing correlations of digital pictures and instruction sets learned in different learning processes involving different users, as required by claim 10. Grotmol discloses *one* user operating *one* device in *one* learning process. Grotmol never discloses (i) using adaptive controllers to learn multiple correlations of digital pictures and instruction sets *in different learning processes much less involving different users* and (ii) storing any such correlations in a *single, mixed knowledgebase*.

PO Sur-Reply [34] at 4

'583: Grotmol Does Not Disclose or Suggest Claim 10

Sur-Reply

Petitioner's argument that a "first controller is trained in a first learning process" to control a robot to approach a target "while a second controller is trained in a second learning process to" control a robot to turn and grasp the target is Petitioner's own words, is conclusory, and is unsupported by Grotmol's disclosure. Reply, 3-4. Grotmol discloses that both of the behaviors cited by Petitioner are a part of a *single learning process involving a single user*, whereby a robot learns a *single task* involving fetching. Ex-1005, 25:30-26:34.

PO Sur-Reply [34] at 5

'583: Grotmol Does Not Disclose or Suggest Claim 10

Sur-Reply

Petitioner's argument that Dr. Saber conceded "that Grotmol's training commands can actually be provided by multiple users," Reply, 7, is wrong and mischaracterizes Dr. Saber's testimony. The cited testimony merely indicates that multiple users *could* provide commands to adaptive controllers. Ex-1016, 166:12-18. And while Grotmol discloses that its "BrainOS software platform may be configured to enable users to selectively remove a learned behavior" (Ex-1005, 34:18-21), this portion of Grotmol *does not say anything about or suggest to a POSA that different learning processes involving different users could generate the various correlations that enable the claimed mixed knowledgebase* of claim 10.

PO Sur-Reply [34] at 9

'583: Grotmol Does Not Disclose or Suggest Claim 10

Sur-Reply

Finally, Petitioner is wrong that Dr. Janet's deposition testimony "was entirely consistent with his prior declaration testimony that claim 10 would have been obvious in view of Grotmol." Reply, 8. Dr. Janet testified that "a person of ordinary skill would understand what Grotmol is disclosing and that would be the limitations of claim 10." Ex. 2008, 54:22-55:3. This testimony confirms that Petitioner and Dr. Janet have failed to perform a proper obviousness analysis for claim 10, which requires ascertaining the "differences between the prior art and the claims at issue." *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966).

PO Sur-Reply [34] at 10

'583: Grotmol Does Not Disclose or Suggest Claim 10

Claim 10

• ~~“knowledgebase”~~

1. ~~“second learning process”~~
2. ~~“second user”~~

10. The system of claim 4, 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 a second user.

Ex-1001 ('583); Claim 10

'583 (-01173): Ground 1 Obviousness (Grotmol-POSA)

- Claim 10: Grotmol Does Not Disclose or Suggest the Claimed Second Learning Process and Second User
- **Claim 11: Grotmol Does Not Disclose or Suggest the Claimed Second Learning Process and Third Device**

'583: Grotmol Does Not Disclose or Suggest Claim 11

Claim 11

- “knowledgebase”
 1. “third device”
 2. “another learning process”

11. The system of claim 4, 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.

'583: Grotmol Does Not Disclose or Suggest Claim 11

Response

¶¶132-133. As discussed above with respect to claim 10, Grotmol only discloses one user operating one device in one learning process. *Supra* Section VI.A.1; Ex. 2007, ¶¶132-133. The knowledge gained from this process in Grotmol, when loaded into another device, is still knowledge of one user operating one device in one learning process, which is about loading the knowledge previously learned on one robot into another robot and not about learning at least a portion of a second digital picture or at least a portion of the second instruction set for operating the *third* device in a *second* learning process that includes operating the *third* device, as required by claim 11. *Id.*

PO Resp. [27] at 17

'583: Grotmol Does Not Disclose or Suggest Claim 11

Grotmol

robotic device. The trained configuration may be stored. A saved configuration may be loaded into the robot being trained thereby providing one or more trained behaviors to the robot. In some implementations, the trained configuration may be loaded to one or more other robots in order to provide learned behaviors. Subsequent to loading of the saved configuration, the controller learning process may match process configuration being present during saving of the configuration.

Ex-1005 at 33:24-35

'583: Grotmol Does Not Disclose or Suggest Claim 11

Response

Petitioner contends that “a POSITA would have recognized the advantages of training across multiple robots” using multiple configurations. Petition, 26. Petitioner’s contention is Petitioner’s own words, not supported in Grotmol, and is conclusory. Petitioner is wrong since it describes a situation involving *multiple trained configurations* each stored and learned on a different robot, whereas claim 11 specifically recites a *single knowledgebase (as opposed to multiple configurations)* that includes *mixed knowledge* of one correlation learned in one learning process (as recited in claim 1 from which claim 11 ultimately depends) involving one device and an *additional correlation learned in a second learning process involving a third device (as recited in claim 11)*. Ex. 2007, ¶¶134-136.

PO Resp. [27] at 18

'583: Grotmol Does Not Disclose or Suggest Claim 11

Grotmol

robotic device. The trained configuration may be stored. A saved configuration may be loaded into the robot being trained thereby providing one or more trained behaviors to the robot. In some implementations, the trained configuration may be loaded to one or more other robots in order to provide learned behaviors. Subsequent to loading of the

Ex-1005 at 33:27-32

'583: Grotmol Does Not Disclose or Suggest Claim 11

Dr. Saber's Declaration

136. Enabling a system to learn mixed autonomous operation knowledge from multiple learning processes involving different devices and integrate such knowledge into a single knowledgebase is an approach not disclosed or suggested in Grotmol and not obvious to a POSA in my opinion. For example, this approach may involve combining the learned knowledge into a coherent knowledge structure, combining the learned knowledge from the different learning processes, combining the learned knowledge from the different devices, and/or other issues not found in Grotmol and not obvious to a POSA.

Ex-2007 at ¶ 136

'583: Grotmol Does Not Disclose or Suggest Claim 11



Common knowledge of a POSA may only be used to supply a missing claim limitation when that limitation is “unusually simple and the technology particularly straightforward.”

Arendi S.A.R.L. v. Apple Inc., 832 F.3d 1355, 1361 (Fed. Cir. 2016)

'583: Grotmol Does Not Disclose or Suggest Claim 11

PO's Sur-Reply

learning process involving operating a third device, as discussed above. Reverting to a previous configuration via the “undo mode” does nothing to somehow transform Grotmol into a reference that teaches the limitations of claim 11 because that previous configuration was still based on a knowledgebase formed with *one* user operating *one* device in *one* learning process.

PO Sur-Reply [34] at 13

'583: Grotmol Does Not Disclose or Suggest Claim 11

PO's Sur-Reply

Petitioner's argument that Grotmol's disclosure of loading one configuration from one robot to another "does not mean that the receiving robot would discard other trained configurations saved on the robot," Reply, 13, is wrong and not supported by Grotmol. First, Petitioner simply manufactures statements (including the annotated Fig. 10B, Reply, 14) and attributes them to Grotmol. Second, the inquiry here is not whether something would or would not be discarded, but the single configuration that is being loaded from one robot to another robot and the receiving robot operating based on this single configuration that is actually disclosed in Grotmol and cited by Petitioner. Grotmol's disclosure cited by Petitioner (Ex-1005, 33:30–32) lacks even a hint of any configuration that may already be in the destination robot. Third, Grotmol never even implies that correlations in

'583: Grotmol Does Not Disclose or Suggest Claim 11

Grotmol

robotic device. The trained configuration may be stored. A saved configuration may be loaded into the robot being trained thereby providing one or more trained behaviors to the robot. In some implementations, the trained configuration may be loaded to one or more other robots in order to provide learned behaviors. Subsequent to loading of the

Ex-1005 at 33:27-32

'583: Grotmol Does Not Disclose or Suggest Claim 11

Petitioner's Reply

To the extent PO argues that Grotmol must provide mixed knowledge within a single controller to render claim 11 obvious, Grotmol does this as well. EX1010, ¶85. This would occur, for example, when the first robot loads a trained configuration from a second robot and a user then modifies the trained configuration through additional training on the first robot. EX1005, 23:12-47 (describing “override” and “correct” modes), 33:30-32; EX1010, ¶85.

Pet. Reply [32] at 15

'583: Grotmol Does Not Disclose or Suggest Claim 11

PO's Sur-Reply

Finally, Dr. Janet has failed to perform a proper obviousness analysis with respect to claim 11 for similar reasons discussed above with respect to claim 10, including that he testified that Grotmol discloses all the features of claim 11, without identifying any claimed features missing from Grotmol for which he was invoking obviousness. Ex. 2008, 59:23-60:2.

PO Sur-Reply [34] at 15

'583: Grotmol Does Not Disclose or Suggest Claim 11

Claim 11

• ~~“knowledgebase”~~

1. ~~“third device”~~

2. ~~“another
learning
process”~~

11. The system of claim 4, 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.

'583 (-01173): Ground 2 Obviousness (Grotmol-Hickman)

- **Claims 25/27: It Would Not Have Been Obvious to Combine Grotmol and Hickman to Arrive at the Claimed Inventions**
 - Claim 25: Grotmol and Hickman Do Not Disclose or Suggest the Claimed Second Device Performing Operations Defined by Instruction Sets for Operating a First Device Involving a Server
 - Claim 27: Grotmol and Hickman Do Not Disclose or Suggest the Claimed Knowledgebase Including Mixed Correlations, Second Correlation Including Instruction Sets for Operating a Third Device, Determining the Instruction Sets for Operating the Third Device, and Causing a Fourth Device to Perform Operations Defined by the Instruction Sets for Operating the Third Device

'583: Grotmol and Hickman Do Not Disclose or Suggest Claim 25

Claim 25

25. The system of claim 4, wherein the system further comprising:

a server that receives from the first device at least one of: the first one or more digital pictures, or the first one or more instruction sets for operating the first device, and wherein the second device receives from the server at least one of: the first one or more digital picture % or the first one or more instruction sets for operating the first 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.

- “second device”

Ex-1001 ('583); Claim 25

'583: Grotmol and Hickman Do Not Disclose or Suggest Claim 27

Claim 27

- “knowledgebase”
 1. second correlation
 2. “third device”
 3. “fourth device”

27. The system of claim 4, 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 the machine readable code, when executed by the one or more processors, causes the one or more processors to further perform at least:

- receiving or generating an additional one or more digital pictures;
- determining the second one or more instruction sets for operating the third device based on at least partial match between the additional one or more digital pictures and the second one or more digital pictures; and
- at least in response to the determining the second one or more instruction sets for operating the third device, causing a fourth device to perform one or more operations defined by the second one or more instruction sets for operating the third device.

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

Response

Combining Hickman's shared knowledgebase with Grotmol's training sets would not have been predictable or obvious because Hickman specifically teaches away from using the claimed correlations (as recited in claims 25 and 27 and discussed below). Ex. 2007, ¶¶138-142. *Hickman discloses storing instruction sets*

PO Resp. [27] at 20

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

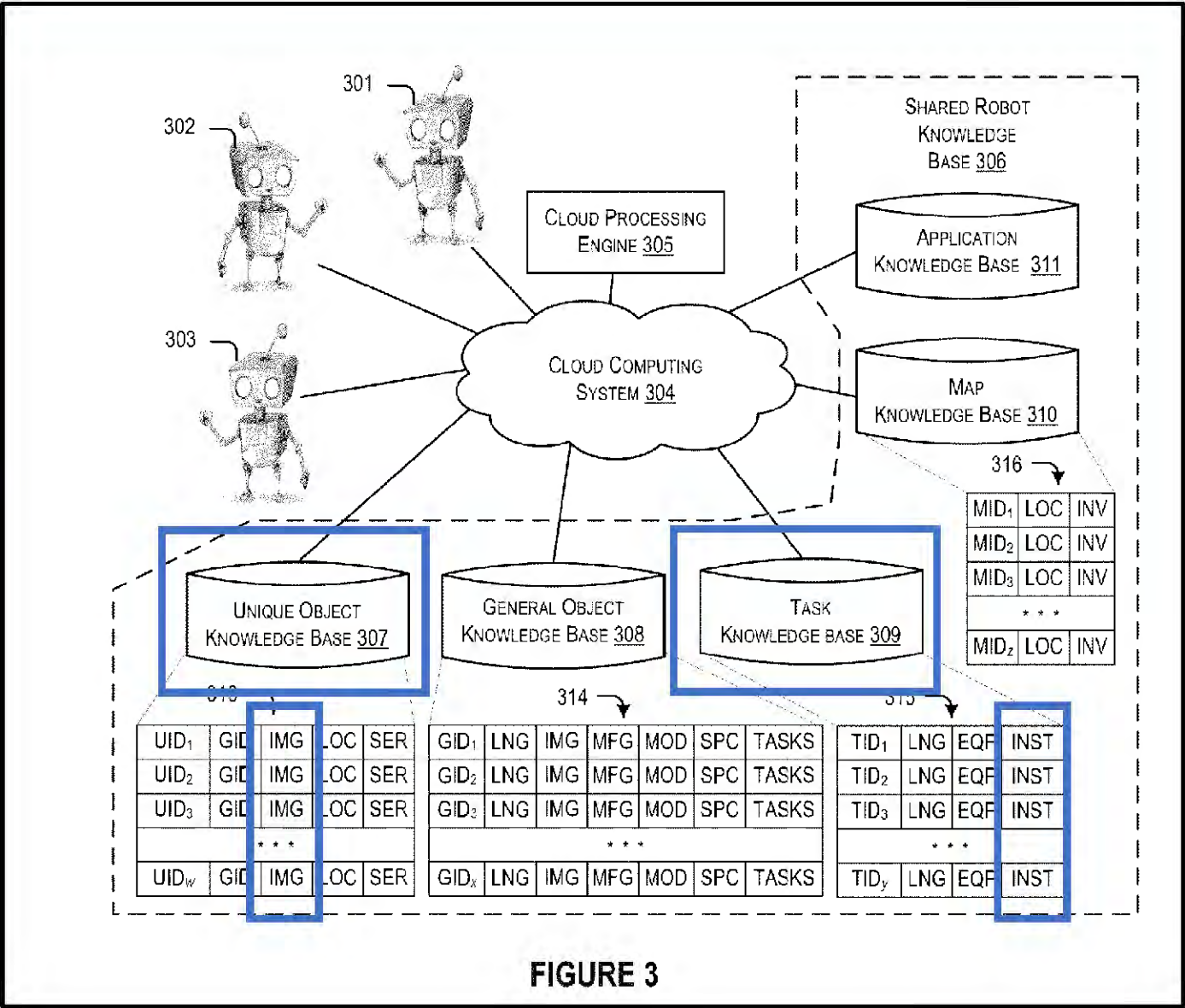
Response

Combining Hickman's shared knowledgebase with Grotmol's training sets would not have been predictable or obvious because Hickman specifically teaches away from using the claimed correlations (as recited in claims 25 and 27 and discussed below). Ex. 2007, ¶¶138-142. Hickman discloses storing instruction sets and images *separately in separate knowledgebases* (images in Unique Object Knowledge Base 307 and instructions in Task Knowledge Base 309, *see* Ex. 1005, Fig. 3), which a POSA would have found to be incompatible with Grotmol's disclosure of training sets or correlations with images and instruction sets *correlated and stored together*. Ex. 2007, ¶¶138-142.

PO Resp. [27] at 20-21

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

Hickman



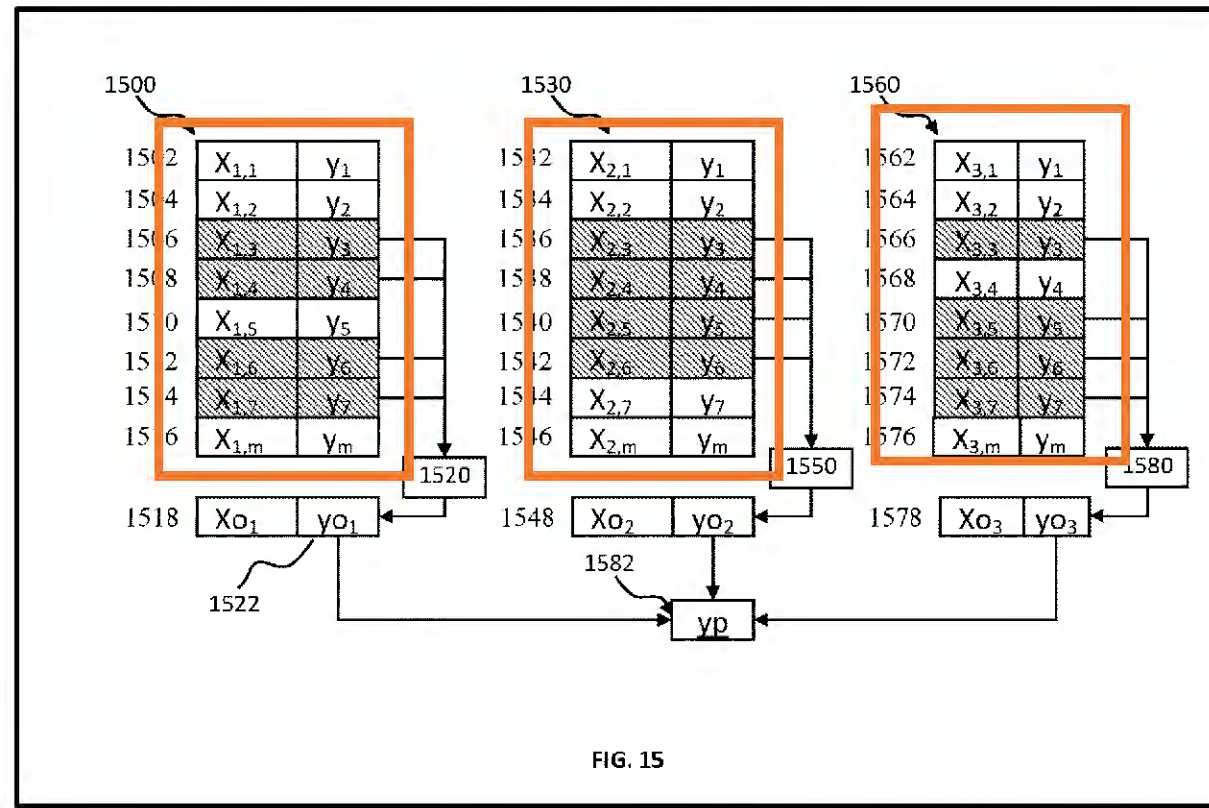
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Ex-1007 at FIG. 3

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

one of two states. The memory component may be configured to store training sets. A given training set may comprise an instance of the video frame, an instance of the binary signal, and an instance of a motor control indication configured to cause the robot to execute an action. The one or

Grotmol



Ex-1005 at 3:35-40, FIG. 15

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

Dr. Saber's Declaration

138. Combining Hickman's shared knowledgebase with Grotmol's training sets would not have been predictable or obvious because Hickman specifically teaches away from or discourages using the claimed correlations (as recited in claims 25 and 27 and discussed below) in my opinion. Hickman discloses storing instruction sets and images separately in separate knowledgebases (images in Unique Object Knowledge Base 307 and instructions in Task Knowledge Base 309, *see* Ex. 1005, Fig. 3), which a POSA would have found to be incompatible with Grotmol's disclosure of training sets or correlations with images and instruction sets correlated and stored together.

Ex-2007 at ¶138

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

Sur-Reply

Petitioner's argument that "the specific data structures and organization of Hickman's knowledgebases is not relevant to the Grotmol-Hickman combination because the combination proposed in the Petition never relied upon or even purported to incorporate the specific data structures or organization of Hickman's knowledgebases," is wrong. Reply, 16. PO's argument here is much more fundamental than whether Petition relied on Hickman's structure and concerns Grotmol's and Hickman's structures being so different that they fail to enable the Grotmol-Hickman combination at all and the alleged sharing of robot knowledgebase. *Hickman discloses sharing a specifically structured knowledgebase with specifically configured robots that can read this specific knowledgebase, not every knowledgebase imaginable.* Petitioner cannot simply

PO Sur-Reply [34] at 15-16

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

Sur-Reply

Petitioner's argument that Hickman does not teach away from the combination with Grotmol "given that Hickman never criticizes correlated images/instruction sets like those described in Grotmol," Reply, 17, misconstrues the point completely. A reference teaches away "when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken" in the claim. *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013). Here, a POSA would have been discouraged from modifying Grotmol with Hickman, *see* Ex. 2007, ¶¶138-142, based on Grotmol's disclosure of training sets stored in memory including correlated images and instruction sets that are stored together, Ex-1005, 3:35-49, and Hickman's disclosure that images and instruction sets are stored separately. Ex-1007, 11:47-12:10; 20:21-34.

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

Sur-Reply

images separately. Reply, 18-20. Instead, *Petitioner now attempts to force an entirely new mapping of Hickman's disclosure to the claimed invention that is untimely, incorrect and impermissible.* For the first time in its Reply, Petitioner maps the tasks data disclosed by Hickman to the claimed instruction sets. Reply, 18-20. But as discussed above in Section II, Petitioner cannot introduce new arguments such as this one, and the Board should reject this argument for this reason alone.

PO Sur-Reply [34] at 17-18

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

Hickman

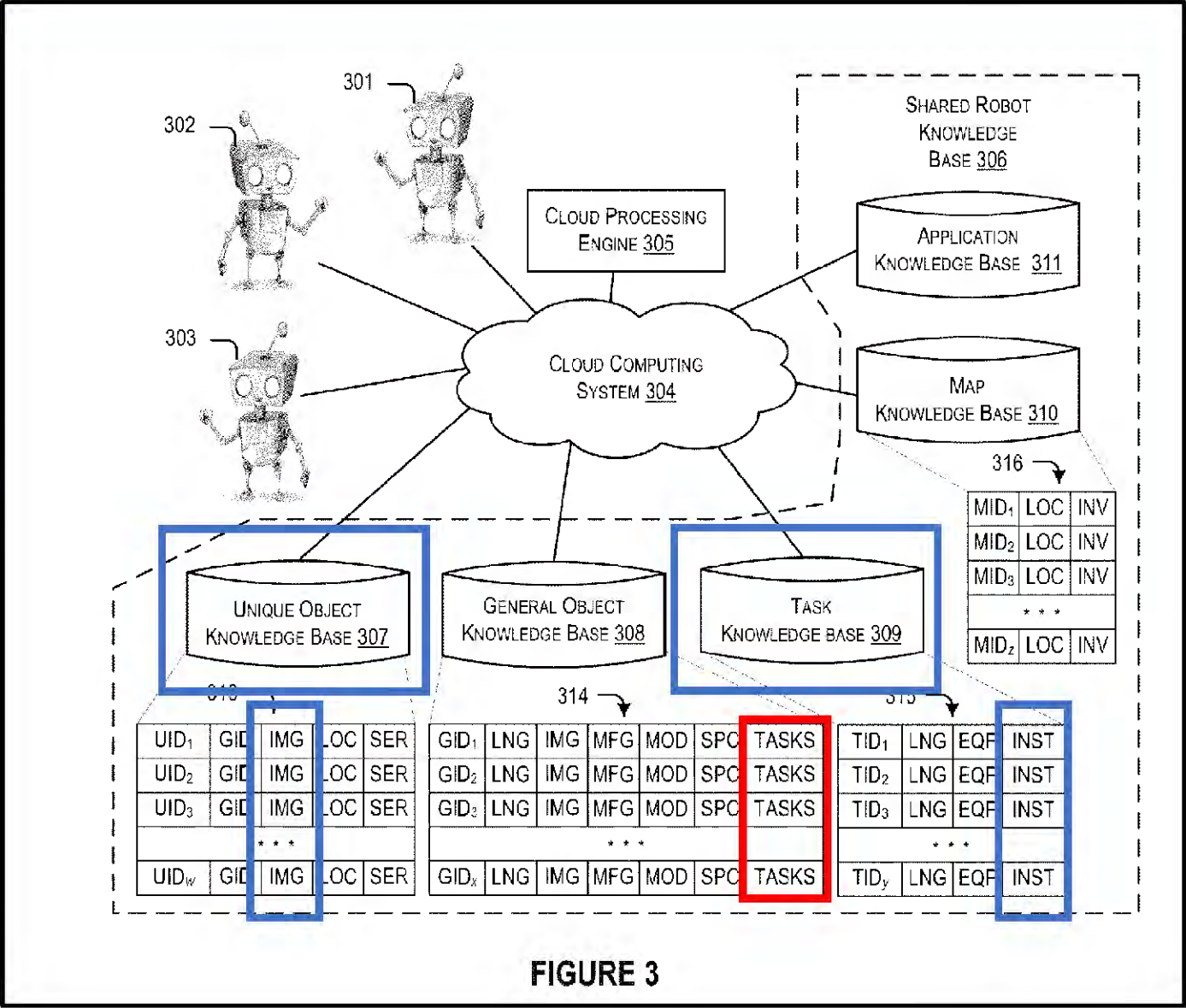


FIGURE 3

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Ex-1007 at FIG. 3

'583: Grotmol and Hickman Do Not Disclose or Suggest Claims 25 and 27

Sur-Reply

Petitioner's argument that all of the data in Hickman is "contained within the higher-order knowledgebase (e.g., 306), and images for both individual unique objects and general objects are correlated with tasks in this knowledge base at least through the UIDs, GIDs, and TIDs," Reply, 20, is Petitioner's own words and unsupported by Hickman as Hickman never discusses "higher-order knowledgebase" and elements being correlated using UIDs, GIDs, and TIDs. Additionally, *Petitioner again attempts to force an entirely new argument.* Petitioner never mentioned in the Petition higher-order knowledge base and elements being correlated using UIDs, GIDs, and TIDs. This new argument is untimely, incorrect, and impermissible, and should be refused consideration.

PO Sur-Reply [34] at 18

'583 (-01173): Ground 2 Obviousness (Grotmol-Hickman)

- Claims 25/27: It Would Not Have Been Obvious to Combine Grotmol and Hickman to Arrive at the Claimed Invention
- **Claim 25: Grotmol and Hickman Do Not Disclose or Suggest the Claimed Second Device Performing Operations Defined by Instruction Sets for Operating a First Device Involving a Server**
- Claim 27: Grotmol and Hickman Do Not Disclose or Suggest the Claimed Knowledgebase Including Mixed Correlations, Second Correlation Including Instruction Sets for Operating a Third Device, Determining the Instruction Sets for Operating the Third Device, and Causing a Fourth Device to Perform Operations Defined by the Instruction Sets for Operating the Third Device

'583: Grotmol and Hickman Do Not Disclose or Suggest Claim 25

Claim 25

25. The system of claim 4, wherein the system further comprising:

a server that receives from the first device at least one of: the first one or more digital pictures, or the first one or more instruction sets for operating the first device, and wherein the second device receives from the server at least one of: the first one or more digital picture % or the first one or more instruction sets for operating the first 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.

- “second device”

Ex-1001 ('583); Claim 25

'583: Grotmol and Hickman Do Not Disclose or Suggest Claim 25

Grotmol and Hickman fail to disclose or suggest the claimed:

1. “second device”

While the Petition is unclear, if Petitioner relies on Hickman to teach the use of a shared knowledgebase with learned multiple behaviors from multiple robots and on Grotmol to disclose digital pictures correlated with the various instruction sets, then this combination of high level concepts fails to disclose or suggest the invention as claimed. Ex. 2007, ¶¶146-147. Claim 25 encompasses more than simply the combination of an additional correlation for a second device in a shared knowledgebase. *Id.* The specific limitations of claim 25 require that *the second device must receive* the first digital picture or first instruction set for the first device and then *perform operations defined by that instruction set.* *Id.* This requires a

PO Resp. [27] at 26

'583: Grotmol and Hickman Do Not Disclose or Suggest Claim 25

Claim 25

25. The system of claim 4, wherein the system further comprising:

a server that receives from the first device at least one of: the first one or more digital pictures, or the first one or more instruction sets for operating the first device, and wherein the second device receives from the server at least one of: the first one or more digital picture % or the first one or more instruction sets for operating the first 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.

• ~~“second device”~~

Ex-1001 ('583); Claim 25

'583 (-01173): Ground 2 Obviousness (Grotmol-Hickman)

- Claims 25/27: It Would Not Have Been Obvious to Combine Grotmol and Hickman to Arrive at the Claimed Invention
- Claim 25: Grotmol and Hickman Do Not Disclose or Suggest the Claimed Second Device Performing Operations Defined by Instruction Sets for Operating a First Device Involving a Server
- **Claim 27: Grotmol and Hickman Do Not Disclose or Suggest the Claimed Knowledgebase Including Mixed Correlations, Second Correlation Including Instruction Sets for Operating a Third Device, Determining the Instruction Sets for Operating the Third Device, and Causing a Fourth Device to Perform Operations Defined by the Instruction Sets for Operating the Third Device**

'583: Grotmol and Hickman Do Not Disclose or Suggest Claim 27

Claim 27

- “knowledgebase”
 1. second correlation
 2. “third device”
 3. “fourth device”

27. The system of claim 4, 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 the machine readable code, when executed by the one or more processors, causes the one or more processors to further perform at least:

- receiving or generating an additional one or more digital pictures;
- determining the second one or more instruction sets for operating the third device based on at least partial match between the additional one or more digital pictures and the second one or more digital pictures; and
- at least in response to the determining the second one or more instruction sets for operating the third device, causing a fourth device to perform one or more operations defined by the second one or more instruction sets for operating the third device.

'583: Grotmol and Hickman Do Not Disclose or Suggest Claim 27

Grotmol and Hickman fail to disclose or suggest the claimed:

1. second correlation
2. “third device”
3. “fourth device”

Claim 27 *requires* that *the second correlation must include one or more instruction sets specifically “for operating the third device,”* the system must generate or receive an additional “digital picture,” the system must determine *“instruction sets [specifically] for operating the third device based on at least partial match between the additional one or more digital pictures and the second one or more digital pictures,”* and *“causing a [specific] fourth device to perform one or more operations defined by the second one or more instruction sets for operating the [specific] third device.”* Petitioner does not map these limitation onto anything in Grotmol and Hickman since the references do not mention these limitations.

PO Sur-Reply [34] at 21

'583: Grotmol and Hickman Do Not Disclose or Suggest Claim 27

Claim 27

• ~~"knowledgebase"~~

1. ~~second~~
correlation

2. ~~"third device"~~

3. ~~"fourth device"~~

27. The system of claim 4, 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 the machine readable code, when executed by the one or more processors, causes the one or more processors to further perform at least:

receiving or generating an additional one or more digital pictures;

determining the second one or more instruction sets for operating the third device based on at least partial match between the additional one or more digital pictures and the second one or more digital pictures; and

at least in response to the determining the second one or more instruction sets for operating the third device, causing a fourth device to perform one or more operations defined by the second one or more instruction sets for operating the third device.

'583 (-01173): Ground 3 Obviousness (Grotmol-Hoffman)

- **Claim 30: It Would Not Have Been Obvious to Combine Grotmol and Hoffman to Arrive at the Claimed Invention**
 - Claim 30: Grotmol and Hoffman Do Not Disclose or Suggest Several Limitations of Claim 30

'583: Grotmol and Hoffman Do Not Disclose or Suggest Claim 30

Claim 30

- Claim 30 relies on Claim 29 and requires:
 - “detecting” “locations” of objects.
 - the “new” digital picture includes a top-down view of the representations of the object

30. The system of claim 29, wherein the detecting the one or more objects in the first device's surrounding or the second device's surrounding includes detecting at least one or more locations of the one or more objects, and wherein the new one or more digital pictures include a top-down view of the one or more representations of the one or more objects.

Ex-1001 ('583); Claim 30

'583: Grotmol Does Not Disclose All the Limitations of Claim 29

Claim 29

29. The system of claim 4, 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 ('583); Claim 29

- **3 Step Process**

1. Detecting one or more objects
2. Generating one or more representations of the one or more objects
3. Generating one or more digital pictures that include the one or more representations of the one or more objects

'583: Grotmol and Hoffman Do Not Disclose or Suggest Claim 30

Sur-Reply

Petitioner's argument that "[t]he alleged dichotomy between autonomous and user-controlled operation in the two references is simply inaccurate," Reply, 24, is false, and Petitioner's quote from Hoffman supporting this argument *is misleading*. Petitioner conveniently cuts the sentence from Hoffman where it suits it, whereas the entire sentence proves that Hoffman is operated by a user: "... the user 10 passes higher-level commands to the robot 200." Ex-1009, 11:39-40 (emphasis added). On Grotmol's side, Grotmol never discloses a user-controlled robot and instead only discloses that a user can train the robot in the portions of Grotmol cited by Petitioner, Reply, 24. *Grotmol's entire purpose is for the robot to be autonomous when it is trained.* Ex. 2007, ¶¶159-161. A POSA would not have been motivated nor would have looked to the augmented map in the user-controlled system of Hoffman to modify the autonomous system in Grotmol, hence the Grotmol-Hoffman combination fails.

'583: Grotmol and Hoffman Do Not Disclose or Suggest Claim 30

Hoffman

shown, the OCU 100 is a touch screen tablet. The OCU 100 provides a user interface of the teleoperation software application 101 that is rendered on the display 110 of the OCU 100 and allows an operator or user 10 to control the robot 200 from a distance. In some examples, the user 10 can select different levels of human control over the robot 200, ranging from a teleoperation mode, in which the user 10 directly controls the motors and actuators on the robot 200, to autonomous operation, in which the user 10 passes higher-level commands to the robot 200. In partially autonomous operation, the robot 200 can perform tasks, such as following a perimeter or wall, recovering from getting stuck in an opening or due to high centering on an obstruction, evading a moving object 114, or seeking light.

Ex-1009 at 11:27-40

'583 (-01173): Ground 3 Obviousness (Grotmol-Hoffman)

- Claim 30: It Would Not Have Been Obvious to Combine Grotmol and Hoffman to Arrive at the Claimed Invention
- **Claim 30: Grotmol and Hoffman Do Not Disclose or Suggest Several Limitations of Claim 30**

Claim 29

29. The system of claim 4, 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 ('583); Claim 29

- **3 Step Process**

1. Detecting one or more objects
2. Generating one or more representations of the one or more objects
3. Generating one or more digital pictures that include the one or more representations of the one or more objects

'583: Grotmol and Hoffman Do Not Disclose or Suggest All the Limitations of Claim 30

Response

~~is wrong.~~ None of the portions of Grotmol cited by Petitioner actually discloses that Grotmol's system detects the locations of one or more objects. Ex. 2007, ¶168. *In fact, Grotmol's detecting of objects makes no mention of detecting the locations of those objects at all*, as Grotmol only discloses detecting objects but does not disclose detecting positions or locations of those objects. *Id.* Further, *Petitioner never contends that Hoffman discloses this limitation*. Because Grotmol and Hoffman fail to disclose or suggest detecting locations of objects, Grotmol in view of Hoffman fails to disclose claim 30.

PO Resp. [27] at 43

- Grotmol and Hoffman Do Not Disclose or Suggest:
 1. Detecting Locations of Objects

'583: Grotmol and Hoffman Do Not Disclose or Suggest All the Limitations of Claim 30

Response

- Grotmol and Hoffman Do Not Disclose or Suggest:
 1. A top-down view of the one or more representations

Grotmol and Hoffman next fail to disclose or suggest the claimed “new one or more digital pictures include a top-down view of the one or more representations of the one or more objects.” Ex. 2007, ¶¶169-170. Petitioner concedes that “Grotmol does not expressly disclose that the new one or more digital pictures include a top-down view of the one or more representations of the one or more objects,” Petition, 42-43, but then makes the unsupported assertion that “this would have been obvious in view of Hoffman’s augmented map of a robot’s surroundings” *Id.*, 43. *The new digital picture in claim 30 is not a general picture that includes some objects like a map in Hoffman, but a picture generated by a picture generation process specifically defined in claim 29.* Ex. 2007, ¶¶169-170. Therefore, Hoffman’s augmented map cannot be the claimed “new one or more digital pictures” because