UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner
v.

AUTONOMOUS DEVICES, LLC,
Patent Owner

Case: IPR2023-01169
U.S. Patent No. 10,607,134

DECLARATION OF DR. ELI SABER, PH.D.

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I, Dr. Eli Saber, declare as follows:

I. INTRODUCTION

1. I have been retained as an independent expert consultant on behalf of Autonomous Devices, LLC ("Patent Owner" or "Autonomous Devices") in this *Inter Partes* Review proceeding ("IPR") before the Patent Trial and Appeal Board ("Board" or PTAB") of the United States Patent and Trademark Office ("PTO") regarding U.S. Patent No. 10,607,134 ("the '134 patent" or "the Challenged Patent") (Ex. 1001).[1] I am being compensated for the time I spend on this matter, in addition to expenses. My compensation in this case is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other interest in this proceeding.

2. In particular, I have been asked to consider, and provide my opinions regarding, whether the alleged prior art references cited in this proceeding disclose or suggest the features recited in certain claims of the '134 patent (claims 1-20), which I understand Tesla, Inc. ("Petitioner" or "Tesla") has challenged in this IPR. In my view, the alleged prior art references do neither. This declaration

[1] In this Declaration, I reference documents by exhibit numbers that, as I understand, are attached to exhibits in this *Inter Partes* Review of the '134 patent.

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is based on the information currently available to me. To the extent that additional information becomes available, I reserve the right to continue my investigation and study, which may include review of documents and information that may be produced, as well as testimony from depositions that have not yet taken place. My opinions are set forth below.

II. BACKGROUND AND QUALIFICATIONS

3. I have summarized in this section my educational background, career history, publications, and other relevant qualifications.

4. I am a Professor in the Department of Electrical and Microelectronic Engineering (EME) and at the Chester F. Carlson Center for Imaging Science at the Rochester Institute of Technology (RIT) in Rochester, New York. I also serve as the Director of the Image, Video and Computer Vision Laboratory. I joined RIT's full-time faculty in 2004. I have over thirty-four (34) years of industry and academic experience, thirty (30) of which are in the fields of Computer Vision, Digital Image/Video Processing, Pattern Recognition and Machine Learning.

5. I received a Ph.D. in Electrical Engineering from the University of Rochester in 1996. My concentration was in Signal/Image/Video Processing, Pattern Recognition, and Computer Vision. I received a Master of Science Degree in Electrical Engineering from the University of Rochester in 1992 in the same concentration as listed above, and I received a Bachelor of Science Degree

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in Electrical and Computer Engineering, Summa Cum Laude, from the State University of New York at Buffalo in 1988.

6. Before becoming a full-time professor, I worked for Xerox Corporation from 1988 to 2004. During my 16 years at Xerox, I was – generally speaking – responsible for: a) delivering color management solutions, image processing innovations, architectures, and algorithms for high-end color printing systems, b) xerographic sub-systems for a variety of color products, and c) control systems for toner production facilities. Among other roles, as an Advanced Development Scientist and Manager, I established the Advanced Design Laboratory – an Imaging/Xerographics lab – and provided technical and managerial leadership for the Electrical, Imaging and Xerographics Department. As a Product Development Scientist and Manager, I led the research and development of color management algorithms and image quality metrics for various product platforms. I also led the Image Science, Analysis, and Evaluation area, with twelve to fifteen direct reports and a budget of approximately $2 million.

7. From 1997 until 2004, I was an adjunct faculty member at the Electrical Engineering Department of the Rochester Institute of Technology and at the Electrical & Computer Engineering Department at the University of Rochester. I was responsible for teaching undergraduate and graduate coursework

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in signal, image, video processing, pattern recognition, and communications and performing research in multimedia applications, pattern recognition, image understanding and color engineering.

8. Since joining RIT full time, I have been responsible for teaching several undergraduate and graduate courses in Digital Signal Processing, Digital Image Processing, Digital Video Processing, Engineering Analysis, Random Signal & Noise, Advanced Engineering Mathematics, Matrix Methods, Pattern Recognition, Communications, Modern Control Theory, and Linear Systems.

9. I proposed, developed and introduced the Digital Video Processing course and reestablished the Pattern Recognition course at the Electrical Engineering Department at RIT. These graduate courses were instrumental in providing MS/PhD students with the proper foundation and knowledge in all aspects of the subject areas in order to perform in-depth research in the field and continue to advance the state of the art.

10. The Digital Video Processing course is designed to provide a thorough and comprehensive coverage of the field. Topics covered include the mathematical representation of digital video including motion and time-varying image formation models, spatio-temporal sampling/reconstruction, sampling structure conversions, motion estimation using optical flow, block-based, pel-recursive, Bayesian and point correspondence type methodologies, segmentation,

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motion tracking, filtering, restoration, super-resolution and compression.

11. The Pattern Recognition course, on the other hand, covers pertinent concepts in Bayes decision theory, linear and nonlinear classifiers, artificial neural networks, feature selection/generation/extraction and clustering.

12. I am currently working to develop a graduate course titled: "Advanced Neural Networks and Deep Learning: Theory, Mathematics and Algorithms." The course is intended to provide an in-depth comprehensive study of the theory, mathematics and algorithms for advanced neural networks and their usage in deep learning. It is primarily targeted for upper graduate students that are planning to pursue advanced studies/research in the field. The course provides a thorough study of shallow and deep neural networks architectures and algorithms, activation functions, backpropagation, initialization, optimization strategies, etc. It then progresses to convolutional and recurrent style neural networks and, if time permits, will provide an overview of attention mechanisms/transformers and deep reinforcement learning. The course is being taught for the first time in Spring 2024.

13. My current research focuses on machine learning for object tracking/remote sensing applications; image/video processing for multimedia, military & biomedical applications; and computer vision and three-dimensional scene reconstruction As a principal investigator (PI) or co-principal investigator,

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I have acquired almost $6 million in research funding since joining RIT and have managed multiple government grants from the Department of Defense as well as several corporate grants from Hewlett-Packard, Lenel, and Data Physics. I am currently managing (as PI) a multiyear government grant from the Department of Defense titled "Target Detection/Tracking and Activity Recognition from Multimodal Data." In this project, we propose to develop operational target detection/tracking techniques and activity recognition/understanding methods that can leverage multimodal data in a fusion framework using deep learning algorithms while providing accurate and near real-time performance.

14. In 2012, I was awarded the Prestigious Trustees Scholarship, the highest award at RIT with regard to research recognition.

15. I am the author or co-author of 38 peer-reviewed journal publications.

16. I have also authored or co-authored 102 conference and workshop publications and a book entitled Advanced Linear Algebra for Engineers with MATLAB, published by CRC Press in February 2009, and am a named inventor on multiple U.S. and foreign patents.

17. I am a senior member of the Institute of Electrical and Electronic Engineers and a member of the IEEE Signal Processing Society, the Electrical Engineering Honor Society, and Eta Kappa Nu.

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18. A complete statement of my industrial and academic records including a listing of the above publications and patents is included with my curriculum vitae in Exhibit 2015.

III. MATERIALS REVIEWED AND TIME OF ALLEGED INVENTION

19. The opinions contained in this declaration are based on the documents that I reviewed, my professional judgment, as well as my education, experience, and knowledge regarding technologies related to the '134 patent.

20. In forming my opinions expressed in this declaration, I reviewed:

- the '134 patent (Ex. 1001);
- the file history of the '134 patent (Ex. 1002);
- the declaration of Dr. Jason Janet (Ex. 1003);
- U.S. Patent No. 8,142,268 to Thomas, et al. ("Thomas" – Ex. 1005);
- U.S. Patent No. 9,434,072 to Buehler, et al. ("Buehler" – Ex. 1006);
- The Parties' papers and exhibits in this case (IPR2023-01169); and
- any other materials that I refer to in this declaration in support of my opinions.

21. I have been asked to consider the time of the alleged invention to be

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around December 19, 2016, which I understand is the filing date of the application (U.S. Patent Application No. 15/382,743 to which the '134 patent claims priority (Ex. 1001, Cover). My opinions reflect how a person of ordinary skill in the art (as I define in Section V below) would have understood the claims and the specification of the '134 patent, the prior art to the patent, and the state of the art, at the time of the alleged invention.

22. As I discuss in detail below, it is my opinion that the claims of the '134 patent that I discuss below in Section IX are not disclosed or suggested by the prior art references cited by Petitioner in this *Inter Partes* Review.

IV. LEGAL STANDARDS

1. Overview

23. I am not an attorney or a legal expert. The legal standards I applied in reaching the conclusions expressed throughout this declaration were provided to me by counsel. In preparing this declaration, I have endeavored to faithfully apply these legal standards. I do not intend to offer opinions on the law. Below, I describe the law I applied in considering whether the claims of the Challenged Patent are patentable.

24. I have been informed that an issued patent is presumed valid and that the challenger of the patent's validity bears the burden of proving invalidity of the patent.

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2. Patent Claims

25. Patent claims describe the invention made by the inventors and describe what the patent owner owns and what the owner may prevent others from doing.

26. Claims may describe products, such as machines or chemical compounds, or processes for making or using a product. Claims are usually divided into parts or steps called limitations.

27. There are two types of claims: independent claims and dependent claims. An independent claim sets forth all the requirements that must be met in order to be covered by that claim. Thus, it is not necessary to look at any other claim to determine what an independent claim covers. A dependent claim does not itself recite all of the requirements of the claim, but refers to another claim for some of its requirements. In this way, the claim depends on another claim. The law considers a dependent claim to incorporate all of the requirements of the claims to which it refers.

28. The dependent claim then adds its own additional requirements. To determine what a dependent claim covers, it is necessary to look at both the dependent claim and any other claims to which it refers.

29. In that case, the dependent claims incorporate the limitations of the independent claim upon which they depend and, if a reference fails to disclose

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any of the limitations of an independent claim, the claims which depend on that claim cannot be made invalid by that reference. As a result, any of the references at issue in this proceeding that fail to disclose all of the limitations of an independent claim necessarily also fail to disclose all of the limitations of claims which depend on that claim.

3. Burden of Proof for Invalidity

30. I understand that the party challenging the validity of an issued U.S. patent in an IPR bears the burden of proving invalidity through facts supported by a preponderance of the evidence. I understand that a "preponderance of the evidence" means evidence sufficient to prove that a fact is more likely true than it is not.

4. Claim Construction

31. I understand that the first step in determining validity is to properly construe the claims. I further understand that, in this proceeding, the Board must determine the scope of the claims by using the same claim construction standard that United States District Courts use. Under this standard, words of a claim are given their "ordinary" and "customary" meaning as understood by a person of skill in the art at the time of the invention. I understand that such a person looks to the claims, specification, and file history in understanding the meaning of the claim terms. I have applied this understanding in this declaration.

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5. Person of Ordinary Skill in the Art

32. I understand that a person having ordinary skill in the art may be defined by factors such as: (a) the levels of education and experience of the inventor and other persons actively involved in the field; (b) the types of problems encountered in the field; (c) prior art solutions to those problems; (d) rapidity with which innovations are made; and (e) the sophistication of the technology.

6. Prior Art

33. I understand that a patent cannot be invalidated based on one person's testimony alone without corroborating evidence, particularly documentary evidence. Moreover, I understand that corroboration is required of any witness whose testimony alone is asserted to invalidate a patent, regardless of his or her level of interest in relation to that patent. Accordingly, even if the testifying individual has no interest in the litigation, I understand that that corroboration is still required.

34. In this declaration, I may use the phrase "prior art" when describing specific references. However, my use of this phrase should not be interpreted as agreement that the item(s) described qualify as prior art under the patent laws. I merely use this phrase to address the items labeled as "prior art" by Petitioner and its expert.

7. Anticipation

35. I understand that a patent claim can be found invalid as anticipated

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if each and every element of the claim, as properly construed, is found either explicitly or inherently in a single prior art reference. If the single prior art reference does not disclose any one claim limitation, then that claim is not anticipated. I further understand that the single prior art reference cannot merely disclose each element; rather, it must disclose all of the elements as arranged in the claim. I have been informed that for a prior art reference to "inherently" disclose something, the reference must necessarily function in accordance with, or include the claimed limitations, to anticipate. The missing descriptive matter cannot merely probably or possibly include the claimed limitations. I further understand that, with respect to an anticipation analysis, it is improper to combine separate, distinct embodiments of a single prior art reference.

36. I understand that for a claim to be anticipated, each claim limitation must be disclosed in a single prior art reference, and the claimed arrangement or combination of those limitations must also be disclosed in that same prior art reference. I understand that for a reference to be anticipatory, the reference must contain an enabling disclosure. I understand that merely naming or describing the subject matter is insufficient if it cannot be produced without undue experimentation.

8. Obviousness

37. I understand that a patent claim can be found invalid as obvious if

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the differences between the claim and the prior art references would have been obvious to a person of ordinary skill in the art at the time of the invention, taking into account (1) the scope and content of the prior art, (2) the differences between the prior art and the claims, (3) the level of ordinary skill in the art, and (4) any objective indicia of non-obviousness. I further understand that a claim can be found to be obvious in light of either a single prior art reference or multiple prior art references. I understand that references qualify as prior art for an obviousness determination only when they are analogous to the claimed invention. Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed; and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

38. To be obvious in light of a single prior art reference or multiple prior art references, there must be a reason either to modify either the single prior art reference or to combine the two or more prior art references to achieve the claimed invention. I understand that this reason may come from a teaching, suggestion, or motivation to combine or may come from the reference or references themselves, the knowledge or "common sense" of one skilled in the art, or from the nature of the problem to be solved, and may be explicit or implicit

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from the prior art as a whole.

39. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.

40. I further understand that there is no suggestion to combine, however, if a reference teaches away from its combination with another source. A reference may be said to teach 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 by the applicant, or if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant. If when combined, the references would produce a seemingly inoperative device, then they teach away from their combination. I understand that it is improper to combine references where the references teach away from their combination.

41. I understand that the degree of teaching away will depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant. I understand that a reference teaches away, for example, if (1) the combination would produce a seemingly inoperative device, or (2) the references leave the impression that the product

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would not have the property sought by the applicant.

42. I understand that if the teachings of a prior art reference would lead one skilled in the art to make a modification that would render another prior art device inoperable, then such a modification would generally not be obvious. I understand that if a proposed modification would render the prior art device unsatisfactory for its intended purpose, then the proposed modification would generally not be obvious.

43. I understand that it is improper to use hindsight in making the obviousness determination.

44. I understand that some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness must be made. For example, I understand that there may be no rational underpinning to support the legal conclusion of obviousness where systems are already complete and the party challenging validity seeks to mix and match components, which each exist in the separate systems, from these complete systems.

V. PERSON OF ORDINARY SKILL IN THE ART (POSA)

45. Based on my review of the '134 patent, the types of problems encountered in the art at and prior to the time of the alleged invention, prior solutions to those problems, the pace with which innovations were made during the relevant time period, the sophistication of the technology, and the educational

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level of active professionals in the field, I believe that a person of ordinary skill in the art (POSA), at the time of the alleged invention, would have had at least a Bachelor's degree in electrical engineering, computer engineering, computer science, systems engineering, or a similar technical field, with at least three years of experience in the field of computer vision, image/video processing, and/or machine learning. Alternatively, a POSA, at the time of the alleged invention, could have had a Master's degree in electrical engineering, computer engineering, computer science, systems engineering, or equivalent course work with a focus in computer vision, image/video processing, and/or machine learning.

46. All of my opinions in this declaration are from the perspective of a person of ordinary skill in the art, as I have defined it above and during the relevant time frame (e.g., late 2016, including December 19, 2016). During this time frame, I possessed at least the qualifications of a POSA, as defined above.

VI. THE '134 PATENT

47. The '134 patent is titled "Artificially intelligent systems, devices, and methods for learning and/or using an avatar's circumstances for autonomous avatar operation" and discloses systems and methods for autonomous operation by learning and using an avatar's circumstances including detecting objects with various properties along with correlated instruction sets for operating the device in various circumstances. Ex. 1001, Abstract, 1:39-41, 57:57-58:4. The

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circumstance and instruction set information is stored in a knowledgebase and used to operate the avatar autonomously. Ex. 1001, Abstract, 1:39-41, 57:57-58:4.

1. Existing Technology

48. Around 2016 at the time of invention, "[c]ommonly employed application and/or avatar operating techniques lack[ed] a way to learn [the] operation of an application and/or avatar and enable autonomous operation of an application and/or avatar." *Id.*, 1:32-35. The '134 patent solved this problem by utilizing a sophisticated system for learning representations of one or more objects in an avatar's surrounding and corresponding instructions that can be efficiently performed autonomously. Ex. 1001, 57:57-58:4.

2. Advantages Provided by the '134 Patent

49. The '134 patent is directed to systems, methods, and computer readable media that store a knowledgebase that correlates avatar operating instruction sets with representations of objects encountered by an avatar, obtain new object representations, match the new object representations with object representations in the knowledgebase, and cause an avatar that detected the new objects to autonomously execute an instruction set correlated to the matched objects. *Id.*, Abstract, 55:1-33, 80:62-83:44.

50. Referring to Figure 5A (shown below) and the specification's description of Figure 5A, for example, avatar 605 may encounter objects 615a-

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615c in its surrounding. Ex. 1001, 80:65-83:44, Fig. 5A, claim 1. Object Processing Unit 140 forms or generates collections of object representations 625a-c representing objects 615a-c in the avatar's surrounding. *Id.* If an avatar detects a match with a previously learned object representation, the avatar performs autonomous operation using previously learned instructions correlated with the previously learned object representations. *Id.*; *see also id.*, 67:1-46.

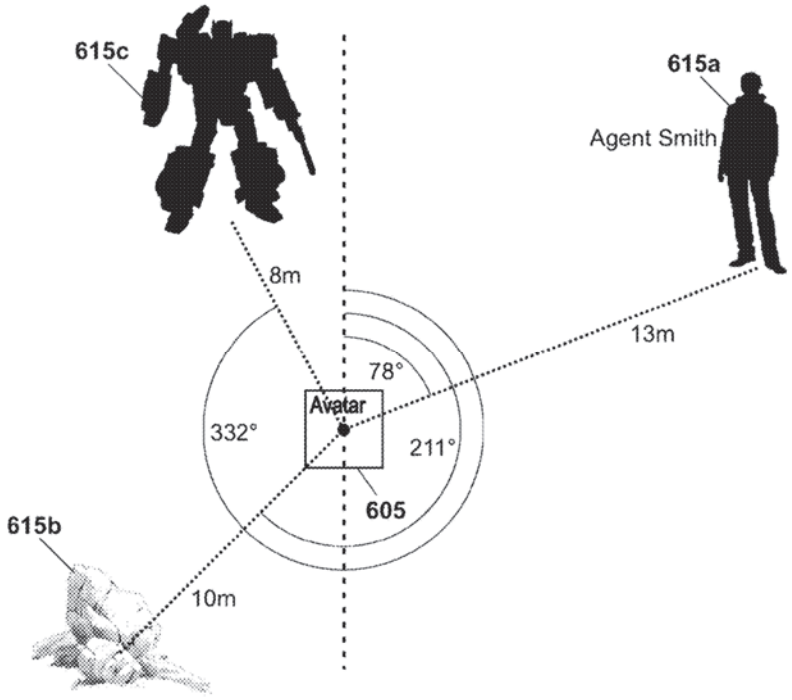


FIG. 5A

Ex. 1001, Fig. 5A.

51. The '134 patent describes and claims methods and systems implementing its innovative techniques for autonomous operation. For example, one such system is claimed in claim 1. Claim 1 is directed to a system that provides correlations of object representations and instruction sets to implement

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autonomous operation.

52. Claim 1, and the other claims that I discuss below in Section IX, introduce limitations that the Petition has not established are disclosed, suggested or rendered obvious by any of the cited prior art references, as explained in more detail below. The '134 patent provides novel and innovative techniques for autonomous operations.

VII. CLAIM CONSTRUCTION

53. I understand that claim terms are typically given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the alleged invention. In considering the meaning of the claims, I also understand that one must consider the claim language, specification, prosecution history, and the knowledge of a person of ordinary skill in the art at the relevant time. I believe construction for the term "connection" as recited in claim 4 requires construction, as explained in more detail below. I understand that Petitioner has proposed claim terms for claim construction, which I discuss below.

1. "connection" (Claim 4)

54. Claim 4 recites in part:

> wherein the first correlation is connected with the third correlation by a ***connection***.

Ex. 1001, Claim 4 (emphasis added).

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55. In the context of claim 4 of the ’134 patent, including in light of the claims, specification, and drawings, a “connection” should be construed as a “relationship that includes a link.” This construction is supported by the claims, specification, drawings, and intrinsic record as a whole, in my opinion. Figure 16 of the ’134 patent makes clear that a connection is a relationship that includes a link:

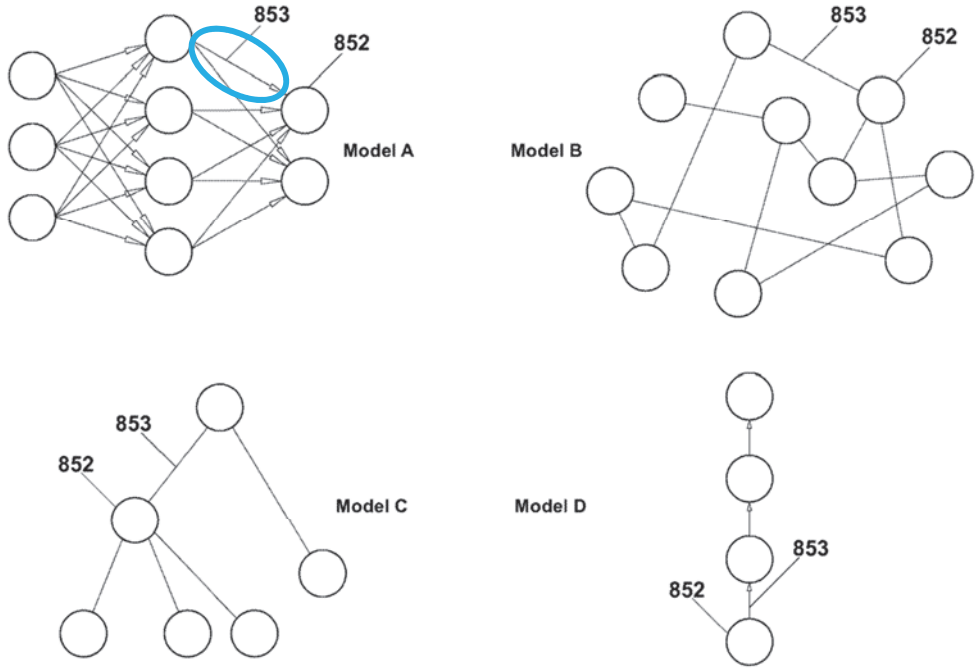


FIG. 16

Ex. 1001, Figure 16 (annotated to show Connection 853 in blue).

56. In describing Figure 16, in this particular use of connections, the ’134 patent states that “machine learning, knowledge structuring or

representation, decision making, pattern recognition, and/or other artificial intelligence functionalities 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." Ex. 1001, 105:18-24. For example, a node may include at least a portion of an object representation while another node may include at least a portion of an instruction set, and the two nodes may be in a relationship that includes a connection or link. As shown for example in Model A in Figure 16, in this particular use of connections, Connections 853 are included in connecting or linking Nodes 852. *Id.*, 105:14-52. Connections are included as some of the elements connecting those nodes and showing relationships between those nodes. Further, "Connection 853 may include or be associated with a value such as a symbolic label or numeric attribute (i.e. weight, cost, capacity, length, etc.)." Exhibit 1001, 105:35-38.

57. In this particular use of connections, Figure 17A of the '134 patent also makes clear that a connection is a relationship that includes a link:

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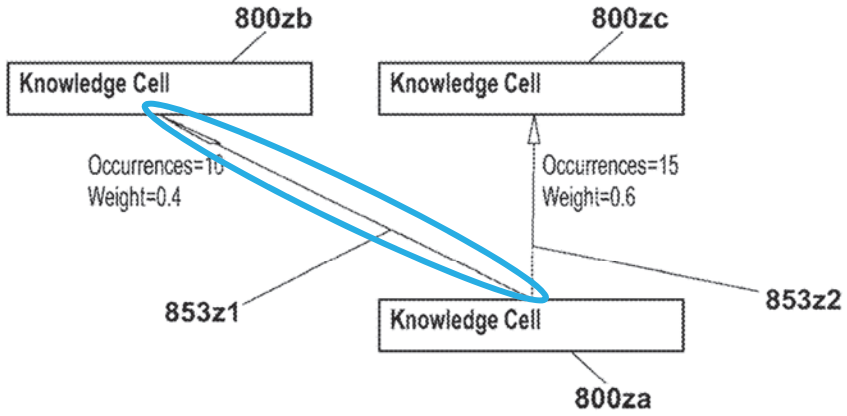


FIG. 17A

Ex. 1001, Figure 17A (annotated to show Connection 853z1 in blue).

58. The specification further explains that, in this particular use, connections between correlations (each knowledge cell depicted in Fig. 17A includes a correlation, *see* Figs. 12-15) "may include or be associated with at least one of: an occurrence count, a weight, a parameter, or a data." Ex. 1001, 16:8-10. In addition, Figure 17A discloses "that Knowledge Cell 800za is connected to Knowledge Cell 800zb and Knowledge Cell 800zc by Connection 853zl and Connection 853z2, respectively. Each of Connection 853zl and Connection 853z2 may include or be associated with occurrence count, weight, and/or other parameter or data." *Id.*, 107:48-53. In my opinion, this also supports Patent Owner's construction, as the connections are relationships that include links.

59. The '134 patent further provides that "[k]nowledge cells [including correlations] may be interconnected, interrelated, or interlinked into knowledge

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structures using statistical, artificial intelligence, machine learning, and/or other models or techniques." Ex. 1001, 155:2-5. In this particular use, connections are used to indicate and track relationships including links to enable more efficient autonomous device operation. *Id.* Further, connections are used to create paths through the knowledgebase for efficient storage and autonomous operation (*see* '134 patent Fig. 21 for example). This disclosure confirms that, with respect to claim 4, connections are relationships that include links in my opinion.

60. I confirm that a POSA would construe connection as a "relationship that includes a link" based on my review of the specification, claims, and other relevant materials. In addition, several dictionaries confirm that "connection" can be defined as a "relationship that includes a link." *See* Ex. 2012; Ex. 2013. One dictionary defines the term connection as "the state of being connected or linked." Ex. 2013. Another dictionary defines "connection" as "a link." Ex. 2012. All of this supports my opinion that a connection is a "relationship that includes a link."

2. "means for generating or receiving…"; "means for determining…"; "means for executing…" (Claim 19)

61. I understand that Petitioner has proposed constructions for certain "means" terms in claim 19. I also understand that for the purpose of this stage of the proceeding only, Patent Owner does not dispute Petitioner's construction of these "means . . ." terms of claim 19.

VIII. OVERVIEW OF ALLEGED PRIOR ART REFERENCES

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62. In its Petition (Paper No. 1), Tesla presents three grounds challenging claims 1-20 using Thomas and Buehler. These references are described briefly below.

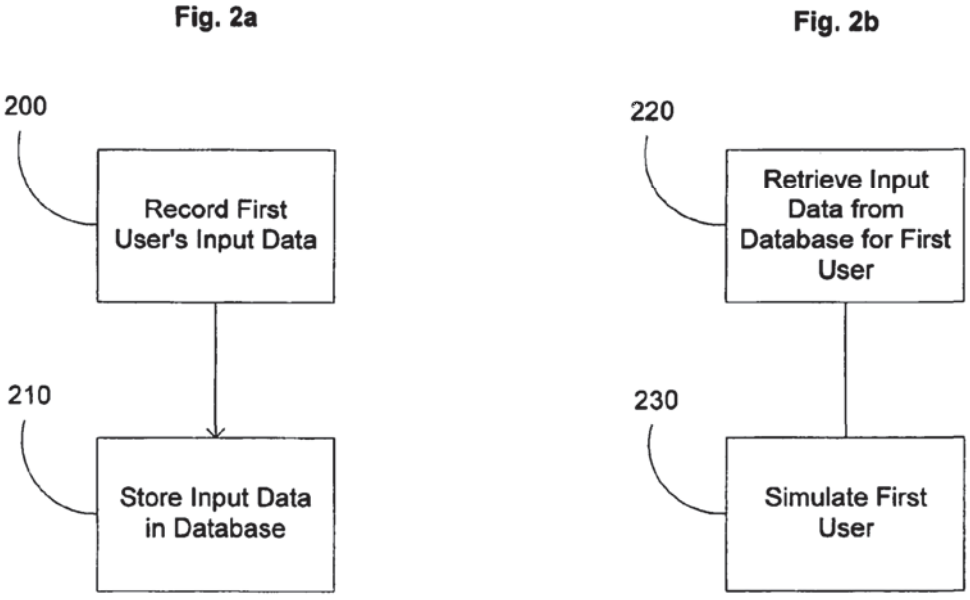
1. **Thomas**

63. Thomas discloses a computer program that monitors a "user's interaction with the computer program for one or more events" and analyzes the situation when the event occurs. Exhibit 1005, Abstract. The computer program creates user profiles, where "[a] user profile can contain a sub-profile related to one or more events 685 and/or situations 655 that occur within the computer program 110 during operation. An event 685 is a particular action occurring, whereas a situation 655 is the surrounding circumstances during which an event 685 may take place." *Id.*, 4:14-19. If any situation occurs for which the program has not been trained on it a priori (e.g., different events, etc.), the program in Thomas would not know how to handle that situation.

64. Figures 2a and 2b from Thomas, shown below, disclose the "learn mode" and "simulation mode" discussed in Thomas. Ex. 1005, 3:52-4:2. During the learn mode shown in Figure 2a, "if a first user is using the computer program 110, the simulator 120 collects and evaluates" information "about the first user's input when interacting with the computer program 110 (action block 200)." *Id.*, 3:52-61. Then, during the simulation mode, "if a second user is using the

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computer program 110 and the second user desires to interact with the first user, but the first user is not available, the simulator 120 will retrieve" information "from the first user, i.e., the first user's profile, from the database 130." *Id.*, 3:63-67.



Ex. 1005, Figs. 2a-2b.

2. **Buehler**

65. Buehler relates to robots that "may be trained to perform tasks such as visually detecting and identifying ***physical*** objects and/or manipulating objects." Ex. 1006, Abstract (emphasis added). Buehler's primitive method uses augmented-reality techniques to facilitate "the robot's simulation of task-execution." *Id.*

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66. Buehler provides a method for training a robot, which is shown below in Figure 1A from Buehler. The robot selects an object in the field of view of one of its cameras and then uses a visual model to identify the object. Ex. 1006, 7:6-10. The robot then determines whether an object-specific manipulation routine is stored in the robot. *Id.*, 7:10-12. If so, the robot executes "the object-specific manipulation routine, and if not," the robot executes "a generic manipulation routine." *Id.*, 7:13-14.

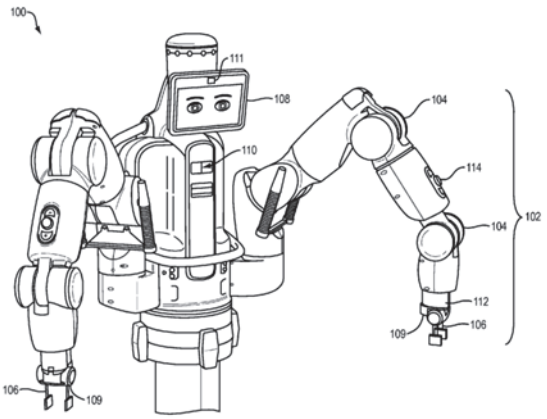


FIG. 1A

Ex. 1006, Fig. 4.

IX. THE ALLEGED PRIOR ART DOES NOT DISCLOSE OR SUGGEST THE CLAIMS OF THE '134 PATENT

67. In my opinion, the alleged prior art fails to disclose or suggest to a POSA all of the elements of claims 1-20 of the '134 Patent under the 3 grounds

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presented in the Petition. Each ground is addressed individually below.

1. Ground 1: Thomas Does Not Disclose the Limitations of Claims 1-20

68. Thomas does not disclose the limitations of claims 1-20 of the '134 Patent. Specifically, Thomas fails to disclose numerous limitations present in these claims.

A. Claim 1: Thomas Does Not Disclose the Claimed Matching of Object Representations

69. Claim 1 recites in part:

> determining the first one or more instruction sets for operating the first avatar of the application ***based on at least partial match between the second one or more object representations and the first one or more object representations***.

Ex. 1001, Claim 1 (emphasis added).

70. In my opinion, Thomas fails to disclose "based on at least partial match between the second one or more object representations and the first one or more object representations," as required by claim 1. Petitioner points to several vague disclosures in Thomas regarding Thomas's simulator, Petition, 15-16, but none of them disclose this claim limitation in my opinion. Petitioner first points to Thomas's disclosure that "the stored data enables the analysis of a user's behavior, tendencies, and inclinations for a given event," and "the simulator 120

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can invoke a corresponding reaction based on the stored data, thereby simulating the user" as disclosing the claimed matching, Petition, 15 (quoting Ex. 1005, 5:25-29). But in my opinion "analysis" is different than "matching," and "stored data," "user's behavior," "tendencies," "inclinations," and "event" are all different than "object representations." In fact, the cited portion of Thomas never mentions anything about matching, much less matching of object representations as required by claim 1.

71. Petitioner's next statement that "during simulation mode the system compares the first object representations recorded during learning mode (e.g., the spatial position of defenders) to the second object representations generated and received during simulation mode (e.g., the spatial position of defenders), and determines instructions for operating the avatar of a simulated user in response to a match," is conclusory. Petition, 15-16. Thomas never discloses comparing or matching the spatial positions of defenders and only provides that such positions are "analyzed." Ex. 1005, 8:8-15. Since Thomas never describes anything about what its analysis involves and since "analysis" is a different concept than "matching," nothing in Thomas suggests, let alone discloses "based on at least partial match between the second one or more object representations and the first one or more object representations."

72. Petitioner further points to the following disclosure in Thomas as

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supporting its position:

> For a pump fake event, during the learning mode 550, the simulator 120 records how often a user pump fakes. For current circumstances, the simulator 120 records how covered the user was and user's location. During playback mode 600, the simulator 120 will monitor for a shoot event and analyze the location of the simulated user and the defensive coverage. If criteria is met, then simulator 120 will invoke a pump fake.

Petition, 16 (citing Ex. 1005, 8:8-15). Petitioner simply cites this portion of Thomas and fails to provide any explanation regarding how this portion of Thomas discloses the claimed matching using object representations. Petition, 16. If Petitioner is pointing to "analyze" in this citation, "analysis" is a different concept than "matching."

73. Thomas's statement that "[i]f criteria is met, then simulator 120 will invoke a pump fake," Ex. 1005, 8:14-15, is vague and fails to disclose the claimed matching process in my opinion. Thomas (and Petitioner) never explain or define what is meant by "criteria," how the criteria are used, and how that criteria are met. While Thomas discloses the statement "analyze the location of the simulated user and the defensive coverage" right before the "[i]f criteria is met, then simulator 120 will invoke a pump fake," since "analysis" is a different concept than "matching" as I discussed above, analysis criteria is also a different concept than "matching."

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74. In his declaration, Dr. Janet points to Thomas's disclosure of analyzing "the current situation, such as time, score, and spatial positions of defensive avatars, to determine which action to invoke that represents the simulated user," as disclosing the claimed matching. Ex. 1003, ¶¶ 241-242. But none of the portions of Thomas's disclosure cited by Dr. Janet actually disclose ***comparing or matching object representations.*** Regardless of what elements are analyzed, those elements are not matched.

75. I understand that in its institution decision, the Board cited Thomas's disclosure of invoking a pass or pump fake if criteria is met and that the simulated user immediately shoots the ball after the catch if the simulated user is located in the typical spot for catch and shoot, as supporting Petitioner's position. Decision, 30 (quoting Exhibit 1005, 7:62–8:15). The Board stated: "we preliminarily find the descriptions [] in Thomas support Dr. Janet's testimony that Thomas discloses 'comparing the circumstances recorded during learning mode with the new circumstances generated during simulation mode' and 'determining either a pump fake or pass instruction in response to detecting at least a partial match.'" Decision, 30. In my opinion, Thomas only discloses "analysis" and analysis "criteria" as Petitioner noted in its citations of Thomas discussed above. Both "analysis" and analysis "criteria" are different concepts than "matching" in my opinion for the reasons I just discussed.

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B. Dependent Claims 2-9 and 11-18

76. Because claims 2-9 and 11-18 depend from claim 1, Petitioner has failed to show that Thomas discloses these claims as well for the reasons I discussed above with respect to claim 1. Furthermore, various dependent claims are also patentable over Thomas for the additional reasons I discuss in the following sections.

1. Claim 3: Thomas Does Not Disclose the Claimed Matching Using Threshold Number or Threshold Percentage

77. Claim 3 depends from claim 1 and requires:

> determining that a ***number*** of at least ***partially matching portions*** of the second one or more object representations and portions of the first one or more object representations ***exceeds a threshold number***, or determining that a ***percentage*** of at least ***partially matching portions*** of the second one or more object representations and portions of the first one or more object representations ***exceeds a threshold percentage***.

Ex. 1001, Claim 3 (emphasis added).

78. In my opinion, Thomas fails to disclose "determining that a number of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold number, or determining that a percentage of at least partially

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matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold percentage."

Petitioner first argues that:

> Thomas describes comparing the first and second object representations, and executing an instruction set when the object representations of the defensive players observed in simulation mode at least partially match those recording during learning mode.

Petition, 20. This statement is conclusory in my opinion. Thomas does not disclose any matching as I discussed above in claim 1, and Thomas does not mention any threshold at all, much less determining that a number of at least partially matching portions of object representations or a percentage of at least partially matching portions of object representations exceeds a numerical or percentage threshold.

79. Petitioner next argues that:

> [A] POSITA would have understood that determining whether the criteria is met (i.e., whether there is at least a partial match) would involve determining whether the matching portions exceed a numerical threshold, such as the number of defenders and the distance of the defenders from the simulated avatar (i.e., the first avatar), as described in the pump fake (i.e., the criteria) and pass out of shot (i.e., how much the avatars are covered) examples.

Petition, 20. Petitioner's statement lacks support and does not explain how determining whether criteria is met discloses the specifically claimed matching of object representations using the number or percentage of at least partially matching portions of object representations in claim 3. Thomas does not mention any threshold

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in its disclosure. In fact, the word "threshold" cannot be found in Thomas at all, let alone "number threshold" or "percentage threshold," let alone that any matching is based on these thresholds. Because Thomas fails to disclose a threshold at all, a POSA reading Thomas's disclosure would not have understood that any threshold, much less a "number threshold" or "percentage threshold," is used in the claimed matching of object representations using the number or percentage of at least partially matching portions of object representations.

80. In my opinion, using the number of at least partially matching portions of object representations in the matching process of claim 3 involves counting the portions and determining whether this counted number of portions exceeds a numerical threshold, and Thomas does not suggest any such counting of portions and numerical threshold. In addition, using the percentage of at least partially matching portions in the matching process involves counting the portions to compute the percentage and determining whether this computed percentage of portions exceeds a percentage threshold, and Thomas does not suggest any such counting of portions, computation, and percentage threshold, either. Therefore, Thomas fails to disclose either disjunctive prong of the claim language of claim 3: (i) a count of at least partially matching portions that would enable a determination of whether the count exceeds a number threshold, or (ii) a percentage of at least partially matching portions that would enable a

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determination of whether the percentage exceeds a percentage threshold.

2. Claim 4: Thomas Does Not Disclose the Claimed Connection Between Correlations

81. Claim 4 depends from claim 1 and requires:

> wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating: the first avatar of the application, the second avatar of the application, a third avatar of the application, or an avatar of another application, and wherein the third one or more object representations represent one or more objects of: the application, or the another application, and wherein ***the first correlation is connected with the third correlation by a connection***.

Ex. 1001, Claim 4 (emphasis added).

82. Thomas fails to disclose "wherein the first correlation is connected with the third correlation by a connection" under the proper construction of "connection." When properly construed, the claimed connection is a relationship that includes a link, as I previously mentioned. Petitioner argues:

> The '134 Patent describes that a connection 'may include or be associated with a value such as a symbolic label or numeric attribute (i.e. weight, cost, capacity, length, etc.)' and 'may include or be associated with occurrence count, weight, and/or other parameters or data.'

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Petition, 23. Petitioner then argues:

> Thomas describes assigning numerical occurrence weight values to a group of correlations that include different instruction sets for the same situation/event (i.e., connections) . . . Accordingly, Thomas discloses that correlations (i.e., first, second, and third correlations) that share a common situation/event are connected to each other via a numerical attribute (i.e., a weighted occurrence value).

Petition, 23-24.

83. First, Petitioner ignores the disclosure cited in its own citation of the '134 Patent that a connection "may include [but does not have to include] or be associated [but does not have to be associated] with a value such as a symbolic label or numeric attribute (i.e. weight, cost, capacity, length, etc.)" and "may include [but does not have to include] or be associated [but does not have to be associated] with occurrence count, weight, and/or other parameters or data." Petition, 23. Therefore, values, labels, numeric attributes, weights, etc. in Petitioner's argument are not applicable to a connection since they may or may not be included or associated with the connection. Second, claim 4 does not recite values, labels, numeric attributes, weights, etc**.** between correlations, but instead claim 4 recites a connection (a relationship that includes a link under the proper construction) between correlations. Therefore, nothing in Thomas even implies, let alone discloses a connection between correlations as required by claim 4.

84. Even if a numerical attribute or value was applicable (which it is not

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as I discussed above), Petitioner's argument that "correlations (i.e., first, second, and third correlations) that share a common situation/event are connected to each other via a numerical attribute," where the numerical attribute in Thomas is the claimed connection, Petition, 24, is conclusory. Petitioner is wrong since the connections disclosed in the '134 patent are not some ancillary numerical attributes or values that may or may not be included or used, but are relationships that include specific links between correlations that Thomas does not suggest, let alone disclose.

85. The '134 patent explains that the connections are used as links in the knowledgebase to enhance autonomous operation, as I mentioned above. Unlike the numerical attributes or values in Petitioner's argument, knowledge cells are created and structured in a specific way to store object representations correlated with instruction sets (i.e., correlations), and are connected in the knowledgebase using connections. These connections create paths through the knowledgebase that enhance autonomous operation (*see* connections 853 in '134 patent Fig. 21 for example).

86. The '134 patent makes clear that connections link specific correlations to create multiple paths through the knowledgebase to enable multiple options in the decision making for autonomous operation. *See* supra Section VII.A. A numerical attribute or value in Petitioner's arguments are not

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the claimed connections or relationships including links among correlations in my opinion. Thomas discloses that a circumstance is only associated with a user input (see Ex. 1005, Abstract), not that those circumstance-user input associations are connected including a specific connection (even under that term's plain and ordinary meaning), let alone connected in a relationship that includes a link under the proposed construction of this term. In fact, Thomas does not disclose any connection, much less a connection between correlations as required by claim 4.

3. Claim 7: Thomas Does Not Disclose the Claimed Temporal Correspondence Between Instruction Sets and Object Representations

87. Claim 7 depends from claim 1 and requires:

> wherein, ***to correlate*** the first one or more object representations with the first one or more instruction sets for operating the first avatar of the application, ***a determination is made that the first one or more instruction sets for operating the first avatar of the application temporally correspond to the first one or more object representations***.

Ex. 1001, Claim 7 (emphasis added).

88. Thomas fails to disclose that "to correlate the first one or more object representations with the first one or more instruction sets for operating the first avatar of the application, a determination is made that the first one or more instruction sets for operating the first avatar of the application temporally correspond to the first one or more object representations." Petitioner first argues

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that Thomas discloses temporal correspondence because "it describes that during learning mode the user inputs commands that the user-controlled avatar executes (i.e., the first instruction set) at the same time that the first object representations are generated on the video interface screen, such as when a user initiates a command in response to certain defensive coverage of opposing players." Petition, 29. But this reference to Thomas only describes associating the defensive coverage situation with whatever user's commands happen to be executed at that time, and does not mention any determination of temporal correspondence between the user's commands and the defensive coverage situation. Thomas's correlating is not something that is performed in response to an extra processing step of determining a temporal correspondence of instruction sets and object representations as required in claim 7.

89. Furthermore, Thomas does not disclose a determination of temporal correspondence of instruction sets and object representations because Thomas does not need such determination since Thomas simply associates situations and user commands at the same time when they happen to be received. Claim 7, on the other hand, relates to at least a situation where a stream of object representations and a stream of instruction sets are first stored and the object representations and instruction sets are correlated later, and where a determination of temporal correspondence is needed for correct correlation.

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90. Petitioner also argues that Thomas discloses this limitation because it describes "storing temporal information . . . as part of the correlation between object representations (e.g., the spatial position of the defenders) and instruction sets." Petition, 30. But storing temporal information as part of a correlation is a different concept than making a determination of temporal correspondence to correlate instruction sets and object representations in my opinion.

4. Claim 12: Thomas Does Not Disclose the Claimed Single Knowledgebase Including Mixed Correlations Learned in Different Learning Processes Involving Different Users

91. Claim 12 depends from claim 1 and requires, among other things:

> wherein ***the knowledgebase further includes a third correlation*** including a third one or more object representations correlated with a third one or more instruction sets for operating the first avatar of the application, and wherein the third one or more object representations represent one or more objects of the application, and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user, and wherein ***at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by another user***, and wherein the user is: a human user, or a non-human user, and wherein the another user is: a human user, or a non-human user.

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Ex. 1001, Claim 12 (emphasis added).

92. Thomas fails to disclose the claimed "the knowledgebase further includes a third correlation . . . wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by another user." Petitioner first points to the disclosure in Thomas that, "any participating user can upload its own user profile for access by any other participating user, and further any participating users can download or access any user profile available in the database 130." Petition, 41 (quoting Ex. 1005, 19:57-62). But claim 12 requires ***learning at least a portion of the third correlation in another learning process involving operation of the first avatar by another user***. Users' ability to upload and download user profiles in Thomas is a different concept than learning at least a portion of the third correlation in another learning process involving operation of the first avatar by another user.

93. Petitioner next argues that:

> A POSITA would have understood, and it would have been obvious, that when a second user plays with the same team and avatars as a first user (e.g., different users playing with the Los Angeles Lakers), the object representations and instruction sets (i.e., including first, second, and third object representations correlated with first, second, and third instruction sets) for operating the same player on the same team (i.e., the first avatar) would be learned in another learning process that includes operating the first avatar

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of the application at least partially by another user.

Petition, 41. Petitioner's argument is conclusory and fails to explain why a POSA would understand that Thomas discloses a single knowledgebase that includes mixed knowledge of a first correlation learned in one learning process with one user and a third correlation learned in another learning process with another user. Thomas only discloses one user operating an avatar during a learning process and simulating that one user in the simulation mode (*see* Ex. 1005, Abstract). Given Thomas's focus on simulating a particular single user, Thomas's system does not store mixed knowledge of different users in a single user profile (unlike the single knowledgebase including mixed knowledge of different users recited in claim 12) since that mixed multi-user knowledge would not simulate the particular single user to accomplish Thomas's stated purpose. This is confirmed by the quote cited by Petitioner regarding downloading and uploading profiles for specific single users where a single user profile includes knowledge learned involving that single user, not the single knowledgebase including mixed knowledge of different users recited in claim 12. Thomas does not disclose the claimed learning at least portions of multiple correlations in different learning processes involving different users and the resulting knowledgebase including mixed knowledge of different users.

94. A POSA, reading Thomas and its lack of disclosure of a single knowledgebase including mixed knowledge of multiple correlations learned in

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different learning processes involving different users, would not understand that the knowledgebase further includes a third correlation where at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by another user, as required by claim 12.

5. Claim 14: Thomas Does Not Disclose the Claimed Knowledgebase Including Instructions Sets and Object Representations Learned Involving Multiple Different Applications

95. Claim 14 depends from claim 1 and requires, among other things:

> wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a ***third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating an avatar of another application***, and wherein the ***third one or more object representations represent one or more objects of the another application***.

Ex. 1001, Claim 14 (emphasis added).

96. Thomas fails to disclose "wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating an avatar of another application, and wherein the third one or more object representations represent one or more objects of the another application." Petitioner argues that

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"storing profiles for 'any participating user' that any other user can 'download or access' to use in simulation mode on the same or a different video game console," and that "a POSITA would have understood . . . that the stored correlations, including at least first, second, and third correlations from one user's profile can be used to operate an avatar on multiple user's game consoles." Petition, 45-46. But Petitioner's contention only describes profiles learned in instances of one application (i.e. basketball video game) used in instances of the same application (i.e. the same basketball video game) on different game consoles, not instructions sets and object representations (i.e. first correlation) learned involving one application (i.e. Fortnite, etc.) and instructions sets and object representations learned (i.e. third correlation) involving a different application (i.e. Apex Legends, etc.) as required by claim 14**.** Instructions and data for one application are conventionally used for that one application. A knowledgebase including mixed knowledge of instructions sets and object representations learned involving multiple different applications to be used across different applications is an innovative concept that Thomas does not disclose.

97. In my opinion, a POSA, reading Thomas's disclosure of profiles learned in instances of one application and used in instances of the same application on different consoles, and not disclosing a knowledgebase including mixed knowledge of instructions sets and object representations learned

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involving multiple different applications to be used across different applications, would not have understood such an unconventional concept as recited in claim 14.

6. Claim 16: Thomas Does Not Disclose the Claimed Deleting, Modifying, Manipulating, or Inserting into the Claimed First Correlation

98. Claim 16 depends from claim 1 and requires that

> ***an element of the first correlation*** is ***deleted*** after the first correlation is generated, ***an element of the first correlation*** is ***modified*** after the first correlation is generated, ***an element of the first correlation*** is ***manipulated*** after the first correlation is generated, or ***an element is inserted into the first correlation*** after the first correlation is generated.

Ex. 1001, Claim 16 (emphasis added).

99. Thomas fails to disclose that "an element of the first correlation is deleted after the first correlation is generated, an element of the first correlation is modified after the first correlation is generated, an element of the first correlation is manipulated after the first correlation is generated, or an element is inserted into the first correlation after the first correlation is generated." Petitioner claims that Thomas discloses that a value or numerical weight associated with user input is an element of a correlation and that this associated value or numerical weight is inserted into/modified/updated in the correlation. Petition, 48. But Petitioner has not explained how a value or numerical weight is an "element of

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the first correlation," as required by claim 16. Claim 1, from which claim 16 depends, specifically provides that the first correlation only includes (A) a first one or more object representations correlated with (B) a first one or more instruction sets. Ex. 1001, Claim 1. Thus, ***the only elements of the first correlation are the first instruction set and the first object representation***. Therefore, association of a value or numerical weight with a user input in Thomas does not delete, modify, nor manipulate an element of the correlation ***since it does not delete, modify, or manipulate (A) the first one or more object representations nor (B) the first one or more instruction sets of the first correlation***. As a result, Thomas fails to disclose deleting, modifying, or manipulating an element of the first correlation as required in the first three limitations of claim 16.

100. Furthermore, ***association*** of a value or numerical weight with a user input in Thomas does not insert the value or numerical weight into the user input and, therefore does not insert a value into a correlation. To insert something into a correlation ***would require inserting something into (A) the first one or more object representations or (B) the first one or more instruction sets (the only constituents of the correlation)***, whereas Thomas ***only associates a value with a user input and does not insert it into (A) the first one or more object representations nor (B) the first one or more instruction sets*** of the first

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correlation. Further, "associating" and "inserting" are different concepts with different meanings in my opinion. As a result, Thomas fails to disclose inserting an element into the first correlation as required by the fourth limitation of claim 16. Nothing in Thomas discloses that any element is deleted, modified, manipulated, or inserted into the first correlation that only includes (A) the first one or more object representations and (B) the first one or more instruction sets after the first correlation is generated.

7. Claim 17: Thomas Does Not Disclose the Claimed Modifying Instruction Sets, Executing the Modified Instruction Sets, and Performing Operations Defined by the Modified Instruction Sets

101. Claim 17 depends from claim 1 and requires:

> ***modifying: the first one or more instruction sets*** for operating the first avatar of the application . . . ***executing: the modified the first one or more instruction sets*** for operating the first avatar of the application . . . ***performing***, by the first avatar of the application or by the second avatar of the application, ***one or more operations defined by: the modified the first one or more instruction sets*** for operating the first avatar of the application.

Ex. 1001, Claim 17 (emphasis added).

102. Thomas first fails to disclose "modifying: the first one or more instruction sets for operating the first avatar of the application." Petitioner points

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to Thomas's disclosure that "[w]hen recording data for a kick profile 420, the simulator 120 may check to see if the user's power has exceeded the minimum or maximum, increment the kick count, and add the power to the total power accumulated." Petition, 49-50 (quoting Ex. 1005, 12:47-51). First, the modifying recited in claim 17 is of instruction sets that are already correlated with object representations (i.e. after they are learned or stored as recited in claim 1 that claim 17 ultimately depends on), not "when recording data" (i.e. during learning) as recited in Petitioner's quote of Thomas. Second, Petitioner's quote of Thomas merely discloses adding power to the total kick power accumulated, not modifying an instruction set as required by claim 17. In fact, Petitioner's quote of Thomas does not even mention instruction sets, user commands, user input, or anything related to an instruction set recited in claim 17, much less modifying an actual instruction set that is included in a correlation with an object representation after being learned.

103. Thomas next fails to disclose "executing: the modified the first one or more instruction sets." Petitioner points to Thomas's disclosure that "[i]n simulation mode . . . and the simulated user is in a kick situation, the simulator 120 may determine the power for kick based on the corresponding kick profile." Petition 50. First, determining is a different concept than executing, thus "determining the power for kick" is different than executing an instruction set.

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Second, executing the modified instruction sets in claim 17 occurs after the instruction sets are already (i) correlated or learned/stored (as recited in claim 1 and as I discussed above) and (ii) determined in the autonomous operation process (as recited in claim 17, note that the first step that recites the modified instruction sets is "executing: the modified the first one or more instruction sets…", which is after the determining step). Thus, determining "the power for kick" is inapplicable to modifying an instruction set after the determining step in the autonomous operation process. Third, as I discussed in the preceding paragraph, Thomas does not disclose that any actual instruction set, user command, user input, or anything related to an instruction set recited in claim 17 is modified. As a result, Thomas does not disclose that a modified instruction set is executed, as required by claim 17.

104. Thomas finally fails to disclose "performing, by the first avatar of the application or by the second avatar of the application, one or more operations defined by: the modified the first one or more instruction sets." Petitioner points to a kicker kicking the football, Petition 51. But a kicker kicking the football does not disclose that the avatar is performing an operation defined ***by the modified instruction set***. Furthermore, as I discussed above, Thomas does not disclose that any actual instruction set, user command, user input, or anything related to an instruction set recited in claim 17 is modified. As a result, in my opinion Thomas

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fails to disclose that operations defined by the modified instruction sets are performed.

8. Claims 10 and 19: Thomas Does Not Disclose the Claimed Matching of Object Representations

105. Independent claims 10 and 19 are method and system claims, respectively, that correspond to system claim 1, and in my opinion they include limitations regarding the claimed matching of object representations similar to claim 1. For the reasons I discussed above with respect to claim 1, Thomas also fails to disclose claims 10 and 19.

2. Ground 2: Thomas in View of the Knowledge of a POSA Does Not Disclose or Suggest the Limitations of Claims 3, 12, and 14

106. In my opinion, Thomas in view of the knowledge of a POSA does not disclose or suggest the limitations of claims 3, 12, and 14 of the '134 Patent. Thomas does not disclose the limitations of claims 3, 12 and 14, and Petitioner's attempt to rely on the knowledge of a POSA to fill any gaps in Thomas is insufficient in my opinion.

A. Claim 3: Thomas Does Not Disclose or Suggest the Claimed Matching Using Threshold Number or Threshold Percentage

107. Claim 3 depends from claim 1 and requires:

> determining that a ***number*** of at least ***partially matching portions*** of the second one or more object

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representations and portions of the first one or more object representations ***exceeds a threshold number***, or determining that a ***percentage*** of at least ***partially matching portions*** of the second one or more object representations and portions of the first one or more object representations ***exceeds a threshold percentage***.

Ex. 1001, Claim 3 (emphasis added).

108. Thomas in view of the knowledge of a POSA fails to disclose or suggest "determining that a number of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold number, or determining that a percentage of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold percentage."

109. Petitioner argues that "it would have been obvious to use a threshold number or percentage to determine whether the criteria regarding defensive coverage is met in order to invoke the simulated action (i.e., a threshold number or percentage regarding how much the avatars are covered)." Petition, 21. Petitioner's argument is conclusory, does not explain how determining whether criteria is met discloses the specifically claimed matching of object representations using the number or percentage of at least partially matching

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portions of object representations, and does not explain why it would have been obvious to use a threshold number or percentage of partially matching portions of object representations as required by claim 3. First, Thomas does not disclose any matching of object representations at all as I discussed above in claim 1. Second, Thomas further does not mention any threshold at all, much less determining that a number of at least partially matching portions of object representations or a percentage of at least partially matching portions of object representations exceeds a numerical or percentage threshold.

110. Using the number of at least partially matching portions of object representations in the matching process of claim 3 ***involves counting the portions and determining whether this counted number of portions exceeds a numerical threshold***, and Thomas does not suggest any such counting of portions and numerical threshold. In addition, using the percentage of at least partially matching portions in the matching process ***involves counting the portions to compute the percentage and determining whether this computed percentage of portions exceeds a percentage threshold***, and Thomas does not suggest any such counting of portions, computation, and percentage threshold, either.

111. In summary, a POSA reading Thomas's lack of a disclosure ***of a "threshold" or anything that would enable a threshold (i.e. count of object representation portions, or computing a percentage of the count)*** would not

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have understood that a threshold, much less a "number threshold" or "percentage threshold," is used in the claimed matching of object representations using the number or percentage of at least partially matching portions of object representations.

112. Petitioner has also failed to establish that the limitations at issue are unusually simple and the technology particularly straightforward and thus obvious to a POSA. Claim 3 involves a sophisticated method using matching portions and thresholds that would not have been obvious to a POSA in my opinion.

B. Claim 12: Thomas Does Not Disclose or Suggest the Claimed Single Knowledgebase Including Mixed Correlations Learned in Different Learning Processes Involving Different Users

113. Claim 12 depends from claim 1 and requires, among other things:

> wherein ***the knowledgebase further includes a third correlation*** including a third one or more object representations correlated with a third one or more instruction sets for operating the first avatar of the application, and wherein the third one or more object representations represent one or more objects of the application, and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user, and wherein ***at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the***

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application at least partially by another user, and wherein the user is: a human user, or a non-human user, and wherein the another user is: a human user, or a non-human user.

Ex. 1001, Claim 12 (emphasis added).

114. Thomas in view of the knowledge of a POSA fails to disclose or suggest that "the knowledgebase further includes a third correlation . . . wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by another user." Petitioner argues that:

> [a] POSITA would have understood, and it would have been obvious, that when a second user plays with the same team and avatars as a first user (e.g., different users playing with the Los Angeles Lakers), the object representations and instruction sets (i.e., including first, second, and third object representations correlated with first, second, and third instruction sets) for operating the same player on the same team (i.e., the first avatar) would be learned in another learning process that includes operating the first avatar of the application at least partially by another user.

Petition, 41. Petitioner's argument is conclusory and fails to explain why it would have been obvious to modify Thomas with the knowledge of a POSA to arrive at the claimed single knowledgebase including mixed knowledge of multiple correlations learned in different learning process involving different users. Thomas only discloses ***one user operating an avatar during a learning process and simulating that one user in the simulation mode*** (*see* Ex. 1005, Abstract). Given Thomas's

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focus on simulating a particular single user, Thomas's system does not store mixed knowledge of different users in a single user profile (unlike the single knowledgebase including mixed knowledge of different users recited in claim 12), since that mixed multi-user knowledge would not simulate that particular single user to accomplish Thomas's stated purpose. ***Thomas's single user profile includes knowledge learned involving that single user, and is not the single knowledgebase including mixed knowledge learned involving different users*** recited in claim 12. Therefore, Thomas does not disclose the claimed learning at least portions of multiple correlations in different learning processes involving different users and the resulting single knowledgebase including mixed knowledge of different users.

115. In addition, the limitations at issue here are not unusually simple and the technology particularly straightforward such that they would have been obvious to a POSA. In my opinion, using different users with an avatar 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. For example, this approach may involve combining the learned knowledge into a coherent knowledge structure, robustly fusing the learned knowledge from many different users, and/or other issues not found in Thomas and not obvious to a POSA.

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C. Claim 14: Thomas Does Not Disclose or Suggest the Claimed Knowledgebase Including Instruction Sets and Object Representations Learned Involving Multiple Different Applications

116. Claim 14 depends from claim 1 and requires, among other things:

> wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a ***third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating an avatar of another application***, and wherein ***the third one or more object representations represent one or more objects of the another application***.

Ex. 1001, Claim 14 (emphasis added).

117. Thomas in view of the knowledge of a POSA fails to disclose or suggest "wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating an avatar of another application, and wherein the third one or more object representations represent one or more objects of the another application."

118. Petitioner argues that Thomas discloses "storing profiles for 'any participating user' that any other user can 'download or access' to use in simulation mode on the same or a different video game console," and that "a POSITA would have understood . . . that the stored correlations, including at least

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first, second, and third correlations from one user's profile can be used to operate an avatar on multiple user's game consoles." Petition, 45-46. But Petitioner's contention in my opinion only describes profiles learned in instances of one application (i.e. basketball video game) and used in instances of the same application (i.e. the same basketball video game) on different game consoles, not instructions sets and object representations (i.e. first correlation) learned involving one application (i.e. Fortnite, etc.) and instructions sets and object representations (i.e. third correlation) learned involving a different application (i.e. Apex Legends, etc.) as required by claim 14**.** Instructions and data for one application are conventionally used for that one application. A knowledgebase including mixed knowledge of instructions sets and object representations learned involving multiple different applications to be used across different applications is an innovative concept that Thomas does not disclose.

119. A POSA, reading Thomas's disclosure of ***profiles learned in instances of one application and used in instances of the same application on a different console***, and not disclosing a knowledgebase including mixed knowledge of instructions sets and object representations learned involving multiple different applications to be used across different applications, would not have understood the unconventional concept recited in claim 14. Further, Petitioner has not established that the invention of claim 14 is simple or

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straightforward. In fact, the claim describes a sophisticated approach to mixing knowledge learned in different games to achieve autonomous operation.

3. Ground 3: Buehler Does Not Disclose the Limitations of Claims 1, 3, and 17

120. In my opinion, Buehler does not disclose the limitations of claims 1, 3, and 17 of the '134 Patent. Specifically, Buehler fails to disclose numerous limitations present in these claims. Further, claims 3 and 17 depend from claim 1, and thus Petitioner has failed to show that Buehler discloses these claims for the same reasons as claim 1 as well as for the additional reasons I discuss in the sections below.

A. Claim 1: Buehler Does Not Disclose the Claimed Object of the Application and Matching of Object Representations

121. Claim 1 recites in part:

> accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, ***wherein the first one or more object representations represent one or more objects of the application***;
>
> generating or receiving a second one or more object representations, ***wherein the second one or more object representations represent one or more objects of the application***;
>
> determining the first one or more instruction sets for operating the first avatar of the application ***based on at least partial match between the***

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second one or more object representations and the first one or more object representations.

Ex. 1001, Claim 1 (emphasis added).

122. Buehler first fails to disclose that "the first one or more object representations represent one or more objects of the application" and that "the second one or more object representations represent one or more objects of the application." While I understand that Petitioner asserts that Buehler may disclose a virtual gripper overlaid as an augmented reality feature as the "avatar of the application" recited in claim 1, *see* Ex. 1006, 21:46-54, the object disclosed by Buehler that is operated on by Buehler's virtual gripper is a ***physical object*** and not an ***object of the application*** represented by an object representation, as required by claim 1. An object representation in claim 1 represents "an object of an application," not a physical object. A physical object is not an object of the application and thus Buehler fails to disclose the claimed ***object of the application***, and as a result fails to disclose ***the object representation that represents an object of an application***, as required by claim 1.

123. None of the objects represented by object representations claimed in claim 1 are physical objects, but are objects "of the application" ***(i.e. virtual objects in the virtual world of the*** application***)***, whereas Buehler's objects are physical objects in the real world ***(i.e. outside of an application)***. For example,

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Buehler specifically discloses that "[v]ia intuitive interactions with a user, robots may be trained to perform tasks such as visually detecting and identifying ***physical objects***." Ex. 1006, Abstract (emphasis added). Further, Petitioner admits that the object in Buehler is a physical object in the real world when it describes instruction sets as "a routine for picking up the object," Petition, 56. As a result, the object disclosed by Buehler and cited by Petitioner for the claimed "object of the application" is a physical object that cannot be an "object of the application," as required by claim 1.

124. Since Buehler fails to disclose ***the object representation that represents an object of an application*** as I just discussed, Buehler must also fail to disclose the "***first correlation*** including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application." Buehler cannot disclose a correlation that includes an element that Buehler has not disclosed.

125. In my opinion, Buehler also fails to disclose "at least partial match between the second one or more object representations and the first one or more object representations." Petitioner first argues that Buehler's disclosure of

> using a visual model to computationally identify the object based on a stored representation thereof associated with the model, determining whether an object specific manipulation routine is stored in association with the stored representation, and, if so, executing the object-specific manipulation routine,

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Petition, 59 (quoting Ex. 1006, 7:6-15), discloses this claim limitation. Petitioner is wrong for several reasons in my opinion. First, the identifying disclosed in Buehler is a different concept than matching in claim 1. Buehler discloses using a visual model to ***identify an object***, Ex. 1006, 7:6-15, not matching object representations.

126. Next, I understand from Buehler that what is being identified in Buehler's object identification ***is objects***, Ex. 1006, 7:6-15, whereas what is being matched in the matching of claim 1 ***is object representations***. Object representations represent objects, but are not the objects themselves. Thus, not only the operations (i.e. identifying vs. matching) are different, but ***the elements (i.e. objects vs. object representations) that these operations operate on are different*** as well in my opinion.

127. Further, in my opinion object identification, recognition, or detection uses image features to identify, recognize, or detect (i.e. Buehler's "detection algorithm 508") the object, and does not match object representations. Object identification, recognition, or detection using image features are different than matching of object representations, and nothing in Buehler and Petitioner's contentions discloses the claimed ***at least partial match between the second one or more object representations and the first one or more object representations*** as required by claim 1 in my opinion.

128. Further, because claims 3 and 17 depend from claim 1, Petitioner

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has failed to show that Buehler discloses these claims as well for the reasons I discussed with respect to claim 1.

B. Claim 3: Buehler Does Not Disclose the Claimed Matching Using Threshold Number or Threshold Percentage

129. Claim 3 depends from claim 1 and requires:

> determining that a ***number*** of at least ***partially matching portions*** of the second one or more object representations and portions of the first one or more object representations ***exceeds a threshold number***, or determining that a ***percentage*** of at least ***partially matching portions*** of the second one or more object representations and portions of the first one or more object representations ***exceeds a threshold percentage***.

Ex. 1001, Claim 3 (emphasis added).

130. Buehler fails to disclose "determining that a number of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold number, or determining that a percentage of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold percentage." As I discussed above with respect to claim 1, Buehler fails to disclose matching using object representations at all, and thus Buehler does not disclose the claimed matching of

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object representations based on determining that a number of at least partially matching portions of object representations or a percentage of at least partially matching portions of object representations exceeds a numerical or percentage threshold.

131. Petitioner argues that the system in Buehler "uses a threshold metric or score (i.e., a threshold number) to assess whether there is a match" of "images." Petition, 61-62. But (i) images in Buehler are not at least partially matching portions of object representations in claim 3, and (ii) the generic metric or score in Buehler is not the specifically recited threshold number or threshold percentage in claim 3, whereas claim 3 requires both (i) and (ii). The metric or score is not the specifically claimed matching of claim 3 that requires determining that a number of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold number, or determining that a percentage of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold percentage. In fact, Buehler does not disclose using any at least partially matching portions of object representations in relation to any numeric or percentage threshold in my opinion.

132. Using the number of at least partially matching portions in the

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matching process of claim 3 involves ***counting the portions and determining whether this counted number of portions exceeds a numerical threshold***, and Buehler does not disclose any such counting of portions and numerical threshold. In addition, using the percentage of at least partially matching portions in the matching process ***involves counting the portions to compute the percentage and determining whether this computed percentage of portions exceeds a percentage threshold***, and Buehler does not disclose any such counting of portions, computation, and percentage threshold, either.

133. Buehler discloses nothing (i.e. count of object representation portions, or computing a percentage of the count) that would enable a "number threshold" or "percentage threshold" to be used in the claimed matching of object representations using the number or percentage of at least partially matching portions of object representations. Buehler's disclosure regarding metric or score does not meet either disjunctive prong of the claim language of claim 3: (i) a count of at least partially matching portions that would enable a determination of whether the count exceeds a number threshold nor (ii) a percentage of at least partially matching portions that would enable a determination of whether the percentage exceeds a percentage threshold. And Petitioner has not pointed to any disclosure in Buehler disclosing these elements. Petition, 61-62.

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C. Claim 17: Buehler Does Not Disclose the Claimed Modifying Instruction Sets, Executing the Modified Instruction Sets, and Performing Operations Defined by the Modified Instruction Sets

134. Claim 17 depends from claim 1 and requires:

> ***modifying: the first one or more instruction sets*** for operating the first avatar of the application . . . ***executing: the modified the first one or more instruction sets*** for operating the first avatar of the application . . . ***performing***, by the first avatar of the application or by the second avatar of the application, ***one or more operations defined by: the modified the first one or more instruction sets*** for operating the first avatar of the application.

Ex. 1001, Claim 17 (emphasis added).

135. In my opinion, Buehler first fails to disclose "modifying: the first one or more instruction sets." Petitioner first points to Buehler's disclosure of a user making coarse and fine adjustments to the position of a gripper, Petition, 62-63. But this disclosure does not say nor even imply anything about modifying any instruction sets and does not even mention instruction sets. Furthermore, adjustments to the position of a gripper in a computer system are technically accomplished by issuing additional, whole, unmodified instructions to the gripper, not by modifying instructions. For example, if a user wants to move the gripper to the left, the user would issue an additional instruction to the gripper to move left, which does not involve modifying any instruction sets. Therefore,

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Petitioner has not established that Buehler discloses that the instruction sets are ***modified as required in claim 17***.

136. Petitioner next points to the fact that "[t]he routines may be programmed into the robot at the outset and altered . . . during training." Petition, 63. But in my opinion the modifying recited in claim 17 is of instruction sets that are already correlated with object representations (i.e. after they are learned or stored as recited in claim 1 that claim 17 ultimately depends on), not "altered . . . during training" as recited in Petitioner's quote. Thus, Petitioner's quote of altering a routine during training is inapplicable to modifying instruction sets after their correlating and learning/storing. In fact, modifying the instruction sets in claim 17 occurs after the instruction sets are already (i) correlated and learned/stored (as recited in claim 1 and as I discussed above), and the modifying occurs even after the instructions sets are (ii) determined in the autonomous operation process (as recited in claim 17, note also that the first step that recites the modified instruction sets is "executing: the modified the first one or more instruction sets", which is after the determining step). Thus, Petitioner's quote of altering a routine during training is further inapplicable to modifying an instruction set after the determining step in the autonomous operation process.

137. Petitioner has also not established that Buehler discloses "executing: the modified the first one or more instruction sets." Petitioner points to Buehler's

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disclosure that "feedback is provided." Petition, 63. But providing feedback is a different concept than executing modified instruction sets in my opinion. Also, as I discussed above, Buehler does not disclose that any actual instruction sets correlated to object representations are modified (especially after the determining step in the autonomous operation process as recited in claim 17).

138. In my opinion, the Petition has also failed to show that Buehler discloses "performing, by the first avatar of the application or by the second avatar of the application, one or more operations defined by: the modified the first one or more instruction sets." Petitioner argues that "the system executes and the virtual robot (i.e., the first avatar) performs the modified instruction set after it is updated by the user and/or system," Petition, 64. This is conclusory. As I discussed above, since Buehler does not disclose that any actual instruction sets correlated to object representations are modified (especially after the determining step in the autonomous operation process as recited in claim 17), Buehler fails to disclose that operations defined by the modified instruction sets are performed.

X. PATENT OWNER'S SUBSTITUTE CLAIMS ARE PATENTABLE

139. I understand that Patent Owner has proposed potentially substituting claims as listed below. The proposed substitute claims do not broaden the claim scope or introduce new subject matter. The proposed claim amendments rewrite dependent claims 2-5, 7, 9, and 11-18 in independent form and further limit the

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system of each of these claims by adding additional functionalities. The claim amendments also further limit independent claims 10 and 19. These amendments to all of the substitute claims further distinguish the claims over the prior art, narrowing the claim scope. The claims are patentable over art from original prosecution, as well as all prior art identified in the petitions in IPR2023-{01054, 01055, 01172, 01173}, which are other proceedings challenging patents owned by PO. Further, as I discuss below, a POSA would have understood that the inventor possessed the substitute claims as of the priority date, and would have been sufficiently enabled in how to make and use the invention recited in the Substitute Claims. As discussed below, I find that Patent Owner's proposed substitute claims are patentable.

1. Proposed Substitute Claims

140. According to Patent Owner's proposal, I understand that some independent claims in the '134 Patent may be canceled and replaced with the proposed substitute claims. I have been asked to evaluate these proposed substitute claims. I understand that these are not currently claims in the '134 Patent. I am informed by Counsel that text that is underlined is proposed to be added to the original claims, and text that is struck through is proposed to be removed from the original claims.

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Claim 21 (Proposed Substitute for Claim 3, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating

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the first avatar of the application;

wherein the determining the first one or more instruction sets for operating the first avatar of the application based on the at least partial match between the second one or more object representations and the first one or more object representations includes: determining that a number of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold number, or determining that a percentage of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold percentage;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure,

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and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 22 (Proposed Substitute for Claim 4, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

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at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating: the first avatar of the application, the second avatar of the application, a third avatar of the application, or an avatar of another application, and wherein the third one or more object representations represent one or more objects of: the application, or the another application, and wherein the first correlation is connected with the third correlation by a connection;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

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comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 23 (Proposed Substitute for Claim 5, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

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determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein the second avatar of the application performs the one or more operations defined by the first one or more instruction sets for operating the first avatar of the application;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

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wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 24 (Proposed Substitute for Claim 7, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or

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more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein, to correlate the first one or more object representations with the first one or more instruction sets for operating the first avatar of the application, a determination is made that the first one or more instruction sets for operating the first avatar of the application temporally correspond to the first one or more object representations;

wherein the first correlation is included in a first knowledge cell, and wherein the first knowledge cell is a data structure for storing, structuring, or organizing the first correlation;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of

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the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 25 (Proposed Substitute for Claim 9, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the

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application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein the first correlation is included in a first knowledge cell, and wherein the first knowledge cell is a data structure for storing, structuring, or organizing the first correlation;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object

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and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 26 (Proposed Substitute for Claim 11, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first

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avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating the first avatar of the application, and wherein the third one or more object representations represent one or more objects of the application, and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user, and wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by the user, and wherein the user is: a human user, or a non-human user;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three

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dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 27 (Proposed Substitute for Claim 12, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations

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represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating the first avatar of the application, and wherein the third one or more object representations represent one or more objects of the application, and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user, and wherein at least a portion of the third correlation is learned in another learning

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process that includes operating the first avatar of the application at least partially by another user, and wherein the user is: a human user, or a non-human user, and wherein the another user is: a human user, or a non-human user;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 28 (Proposed Substitute for Claim 13, if Found Unpatentable)

A system comprising:

one or more processors; and

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one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more

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object representations correlated with a third one or more instruction sets for operating a third avatar of the application, and wherein the third one or more object representations represent one or more objects of the application, and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user, and wherein at least a portion of the third correlation is learned in another learning process that includes operating the third avatar of the application at least partially by: the user, or another user, and wherein the user is: a human user, or a non-human user, and wherein the another user is: a human user, or a non-human user;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

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wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 29 (Proposed Substitute for Claim 14, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the

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application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating an avatar of another application, and wherein the third one or more object representations represent one or more objects of the another application;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

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wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 30 (Proposed Substitute for Claim 15, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the

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application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein the first one or more instruction sets for operating the first avatar of the application include one or more information about one or more states of: the first avatar of the application or a portion of the first avatar of the application;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the

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application.

Claim 31 (Proposed Substitute for Claim 16, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the

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application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein: an element of the first correlation is deleted after the first correlation is generated, an element of the first correlation is modified after the first correlation is generated, an element of the first correlation is manipulated after the first correlation is generated, or an element is inserted into the first correlation after the first correlation is generated;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the

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application.

Claim 32 (Proposed Substitute for Claim 17, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the

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application at least by executing the first one or more instruction sets for operating the first avatar of the application;

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 avatar of the application, or a copy of the first one or more instruction sets for operating the first avatar of the application, and

wherein the executing the first one or more instruction sets for operating the first avatar of the application includes executing: the modified the first one or more instruction sets for operating the first avatar of the application, or the modified the copy of the first one or more instruction sets for operating the first avatar of the application, and

wherein the performing, by the first avatar of the application or by the second avatar of the application, the one or more operations defined by the first one or more instruction sets for operating the first avatar of the application includes performing, by the first avatar of the application or by the second avatar of the application, one or more operations defined by: the modified the first one or more instruction sets for operating the first avatar of the application, or the modified the copy of the first one or more instruction sets for operating the first avatar of the application;

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wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 33 (Proposed Substitute for Claim 18, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

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accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;

wherein at least a portion of the first correlation is learned in a learning process that includes:

operating the first avatar of the application at least partially by: a human user, or a non-human user;

generating or receiving the first one or more object representations; and

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obtaining or receiving the first one or more instruction sets for operating the first avatar of the application;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 34 (Proposed Substitute for Claim 10, if Found Unpatentable)

A method implemented using a computing system that includes one or more processors, the method comprising:

accessing a memory that stores at least a first correlation including a first

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one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, executing the first one or more instruction sets for operating the first avatar of the application or a second avatar of the application performs one or more operations defined by the first one or more instruction sets for operating the first avatar of the application;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of

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the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

Claim 35 (Proposed Substitute for Claim 19, if Found Unpatentable)

A system comprising:

a memory that stores at least a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

means for generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

means for determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations;

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and

means for executing, at least in response to the determining, the first one or more instruction sets for operating the first avatar of the application, wherein the first avatar of the application or a second avatar of the application performs one or more operations defined by the first one or more instruction sets for operating the first avatar of the application;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

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Claim 36 (Proposed Substitute for Claim 2, if Found Unpatentable)

A system comprising:

one or more processors; and

one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:

accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application, wherein the first one or more object representations represent one or more objects of the application;

generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;

determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and

at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating

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the first avatar of the application;

wherein the first one or more object representations include: one object representation, a stream of object representations, a collection of object representations, or a stream of collections of object representations, and wherein the second one or more object representations include: one object representation, a stream of object representations, a collection of object representations, or a stream of collections of object representations, and wherein the one or more objects of the application represented by the first one or more object representations are detected at a first time or during a first time period, and wherein the one or more objects of the application represented by the second one or more object representations are detected at a second time or during a second time period;

wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and

wherein the first object representation includes a first data structure that:

is generated at least in response to processing a type and a location of the first 3D object, and

comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and

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wherein the second object representation includes a second data structure, and

wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.

2. The Original Application for the '134 Patent Includes Support for the Proposed Substitute Claims

141. I have been asked to provide my opinions regarding whether the proposed substitute claims are supported by the original application for the '134 Patent. In performing this analysis, I have applied the plain and ordinary meaning of the terms other than the claim terms discussed above in Section VII (for which I applied the construction mentioned in that section). I include exemplary citations to the original application for both the existing limitations of the claims and the limitations added by each proposed substitute claim. The '134 patent issued from U.S. Patent Application No. 15/382,743 ("the '743 Application"), which is found at pages 1-154 of Exhibit 1007.[2]

142. As noted above, the Substitute Claims rewrite claims 2-5, 7, and 9-19 in independent form with additional limitations. Because the following

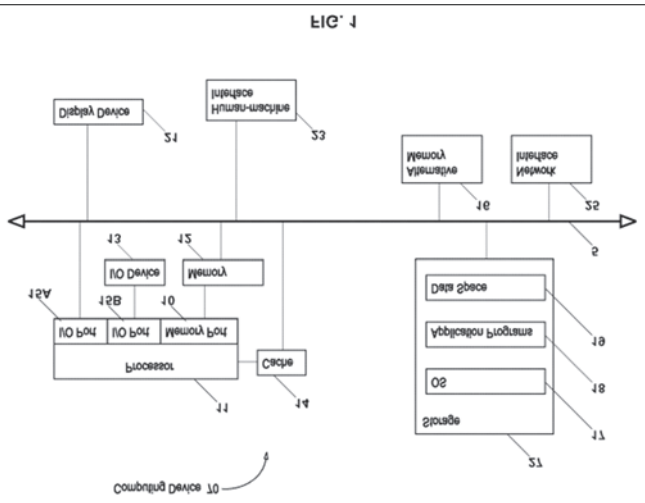
[2] Citations are provided herein to the originally-filed '743 Application—e.g., '743 Application at [1:5-8] refers to Ex. 1007, 58:5-8.

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features are in each Substitute Claim and also in one of independent Claims 1, 10, and 19, the base claims from which claims 2-5, 7, 9, 11-18 depend, the substitute claims were supported by the ’734 Application. A POSA would have found that the inventor was in the possession of the features (and each claim as a whole) at the time of filing the ’734 Application.

Claim Limitation	Support from Original U.S. Application for the '134 Patent
Support for Original Claim 1 (Limitations Common to Proposed Substitute Claims 21-33, 36)	
A system comprising: one or more processors; and	The ’743 Application supports “A system comprising: one or more processors.” For example, the ’734 Application discloses: Artificially Intelligent Systems, Devices, and Methods for Learning and/or Using an Avatar’s Circumstances for Autonomous Avatar Operation ’743 Application at [Title]. Aspects of the disclosure generally relate to computing devices and/or systems, and may be generally directed to devices, systems, methods, and/or applications for learning an avatar’s or an application’s operation in various circumstances, storing this knowledge in a knowledgebase (i.e. neural network, graph, sequences, etc.), and/or enabling autonomous operation of the avatar or the application. ’743 Application at [Abstract].

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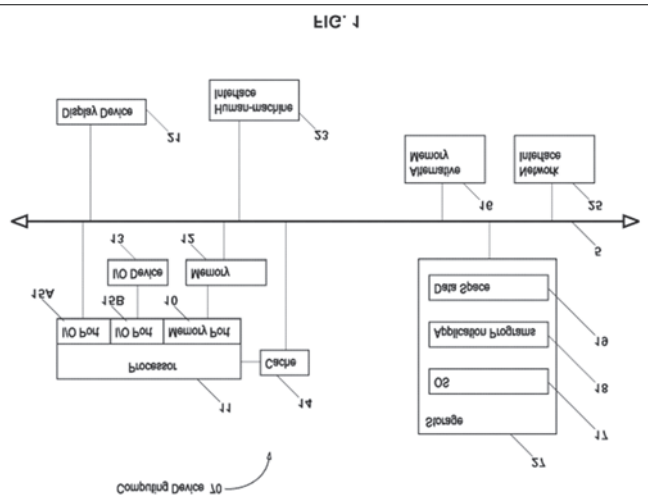
’743 Application at [Fig. 1].

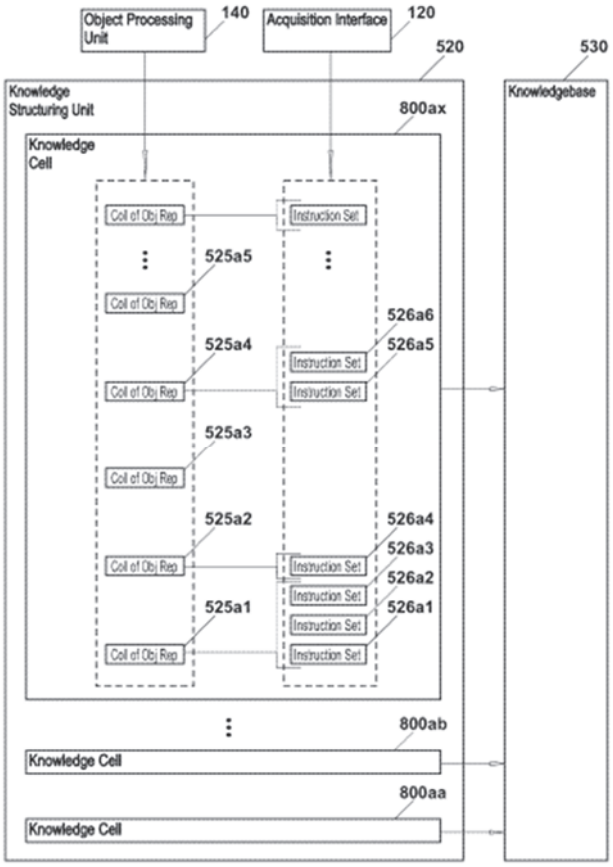
In some embodiments, the system comprises: a processor circuit configured to execute instruction sets of an application.

’743 Application at [1:25-26].

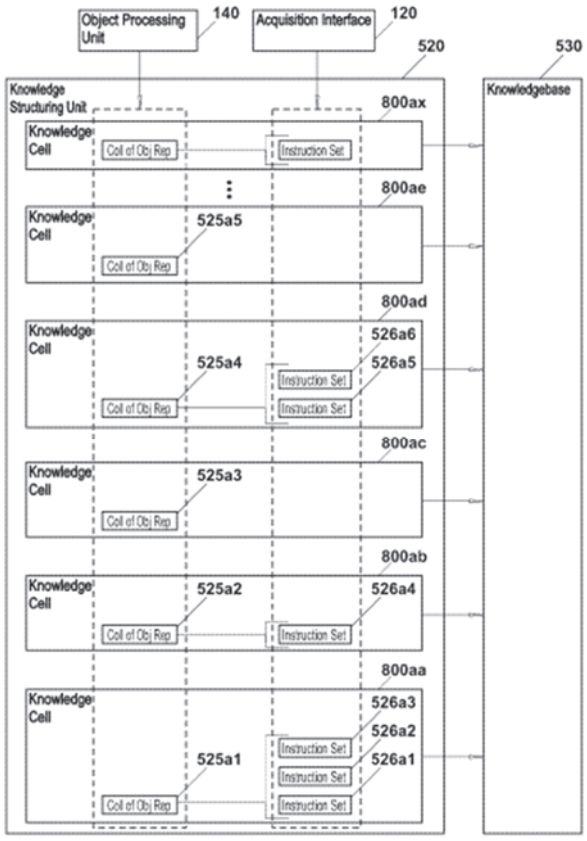
Processor 11 includes one or more circuits or devices that can execute instructions fetched from memory 12 and/or other element Processor 11 may include any combination of hardware and/or processing techniques or capabilities for executing or implementing logic functions or programs. Processor 11 may include a single core or a multi core processor. Processor 11 includes the functionality for loading operating system 17 and operating any application programs 18 thereon. In some embodiments, Processor 11 can be provided in a microprocessing or a processing unit, such as, for example, Snapdragon processor produced by Qualcomm Inc., processor by Intel Corporation of Mountain View, California, processor manufactured by Motorola Corporation of Schaumburg, Ill.; processor manufactured by Transmeta Corporation of Santa Clara, Calif.; processor manufactured by International Business Machines of White Plains, N.Y., processor manufactured by Advanced Micro Devices of Sunnyvale, California, or

	any computing circuit or device for performing similar functions. In other embodiments, processor 11 can be provided in a graphics processing unit (GPU), visual processing unit (VPU), or other highly parallel processing circuit or device such as, for example, nVidia GeForce line of GPUs, AMD Radeon line of GPUs, and/or others. Such GPUs or other highly parallel processing circuits or devices may provide superior performance in processing operations on neural networks, graphs, and/or other data structures. In further embodiments, processor 11 can be provided in a micro controller such as, for example, Texas instruments, Atmel, Microchip Technology, ARM, Silicon Labs, Intel, and/or other lines of micro controllers. In further embodiments, processor 11 can be provided in a quantum processor such as, for example, D-Wave Systems, Microsoft, Intel, IBM, Google, Toshiba, and/or other lines of quantum processors. In further embodiments, processor 11 can be provided in a biocomputer such as DNA-based computer, protein-based computer, molecule-based computer, and/or others. In further embodiments, processor 11 includes any circuit or device for performing logic operations. Processor 11 can be based on any of the aforementioned or other available processors capable of operating as described herein. Computing Device 70 may include one or more of the aforementioned or other processors. In some designs, processor 11 can communicate with memory 12 via a system bus 5. In other designs, processor 11 can communicate directly with memory 12 via a memory port 10. ’743 Application at [53:15-38].
one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more	The ’743 Application supports “and one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:.” For example, the ’734 Application discloses:

processors, causes the one or more processors to perform at least:	 '743 Application at [Fig. 1]. In some aspects, the disclosure relates to a non-transitory computer storage medium having a computer program stored thereon, the program including instructions that when executed by one or more processor circuits cause the one or more processor circuits to perform operations comprising: '743 Application at [15:28-30]. In some aspects, the disclosure relates to a non-transitory computer storage medium having a computer program stored thereon, the program including instructions that when executed by one or more processor circuits cause the one or more processor circuits to perform operations comprising: '743 Application at [22:29-31].
accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first	The '743 Application supports "accessing a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application." For example, the '734 Application discloses:

avatar of an application,	 FIG. 12 ’743 Application at [Fig. 12]. For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown).

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	Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].  FIG. 13

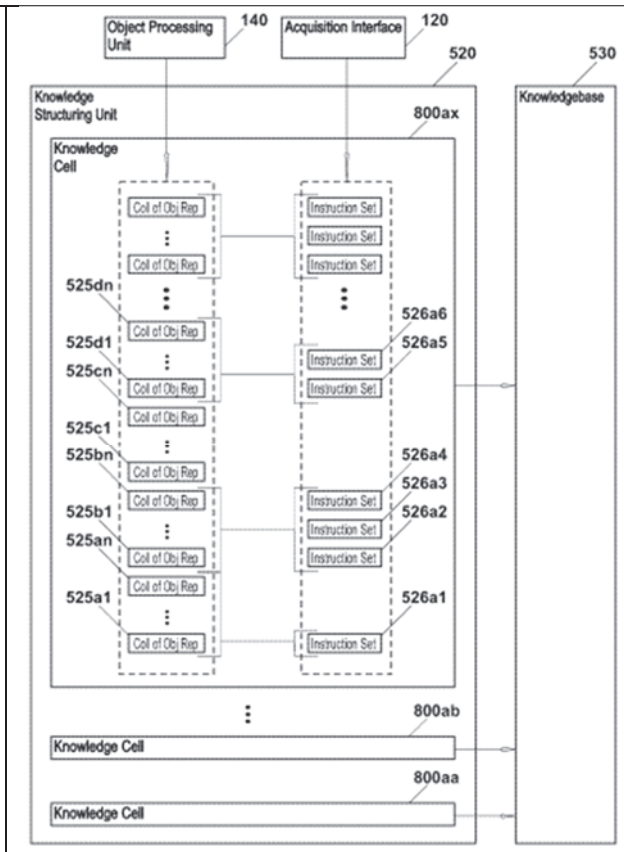


FIG. 14

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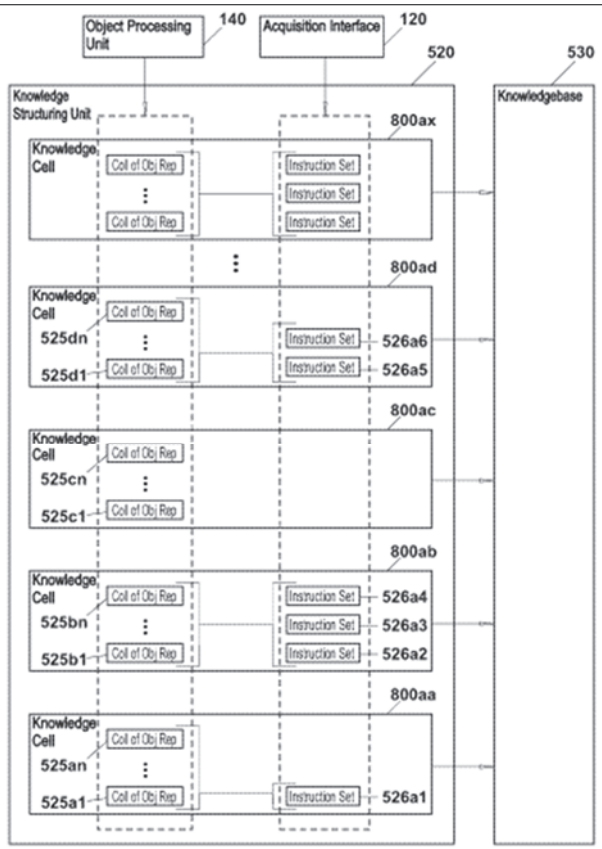


FIG. 15

’743 Application at [Figs. 13-15].

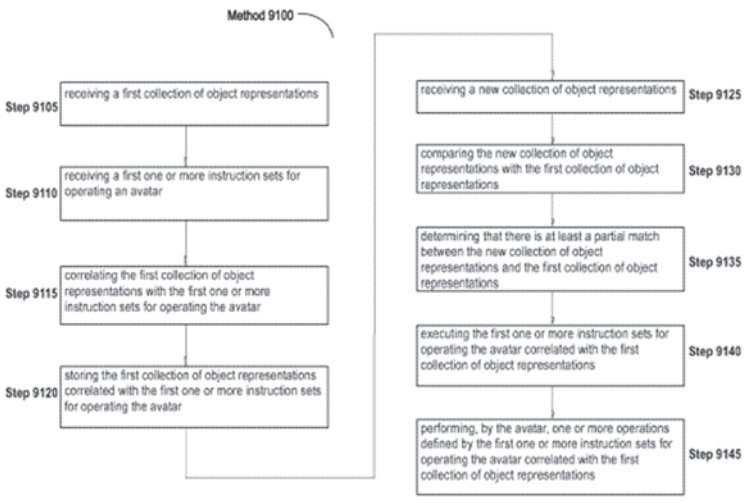
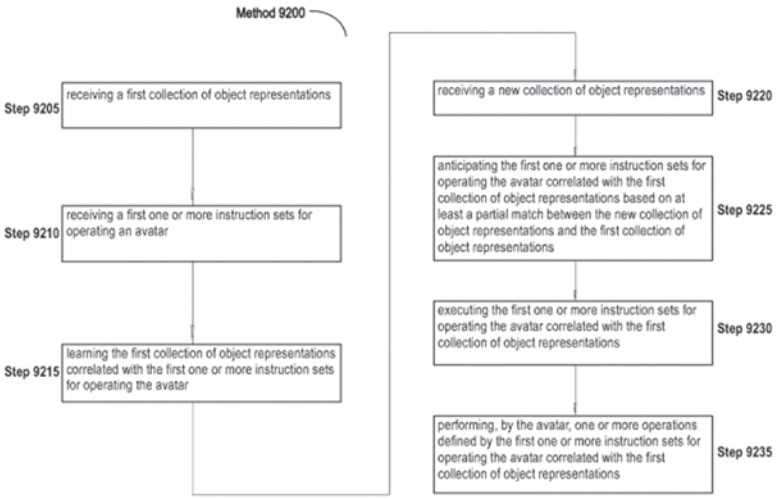
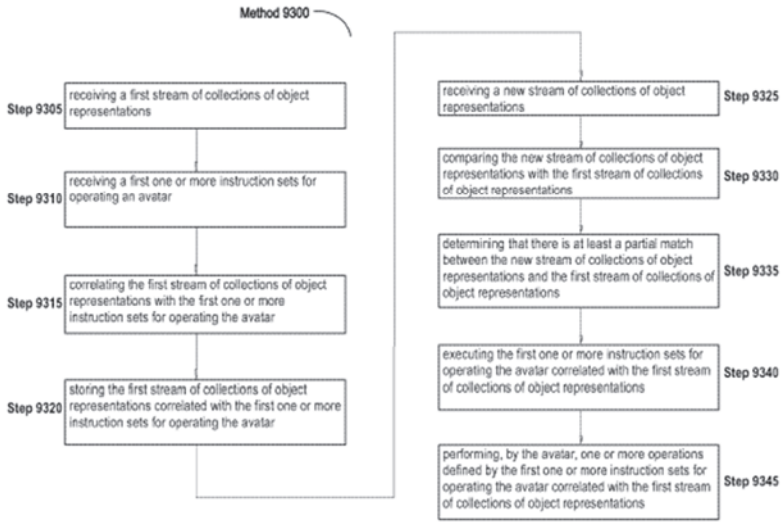


FIG. 30

’743 Application at [Fig. 30].

	At step 9120, the first collection of object representations correlated with the first one or more instruction sets for operating the avatar are stored. ’743 Application at [139:12-13].  FIG. 31  FIG. 32

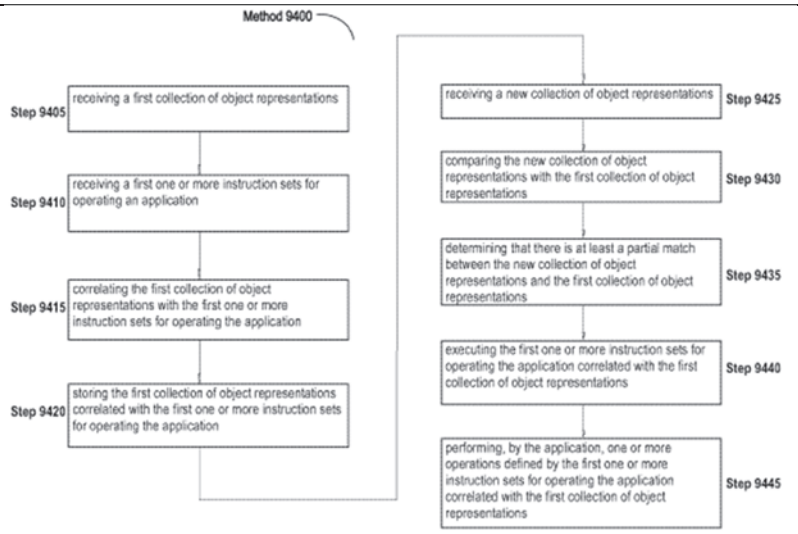


FIG. 33

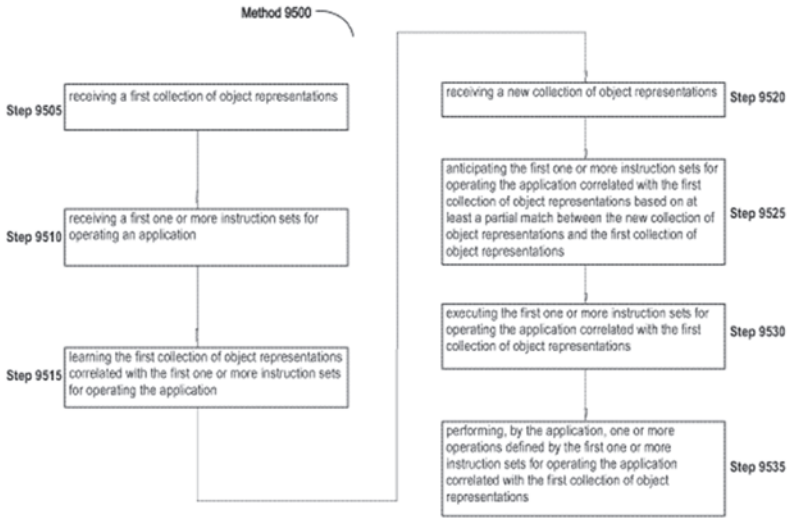


FIG. 34

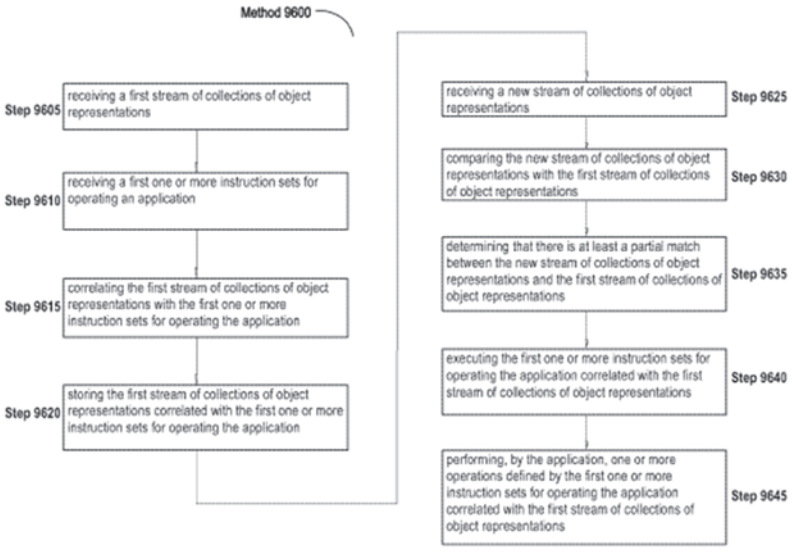
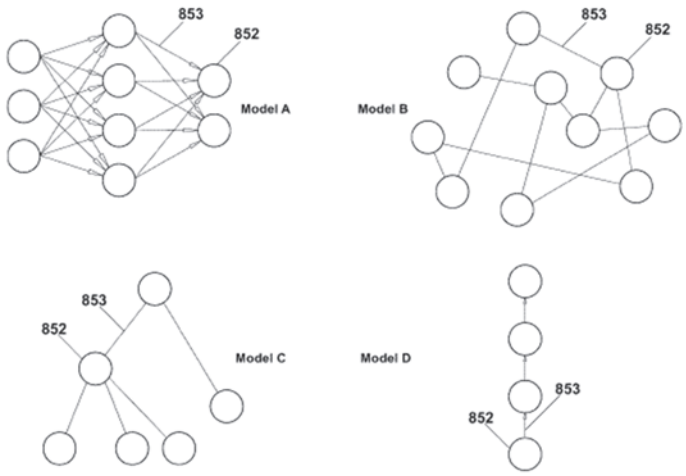


FIG. 35

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	’743 Application at [Figs. 31-35].  FIG. 16 ’743 Application at [Fig. 16].
wherein the first one or more object representations represent one or more objects of the application;	The ’743 Application supports “wherein the first one or more object representations represent one or more objects of the application.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar’s 605 surrounding within Application Program

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18.

’743 Application at [62:14-22].

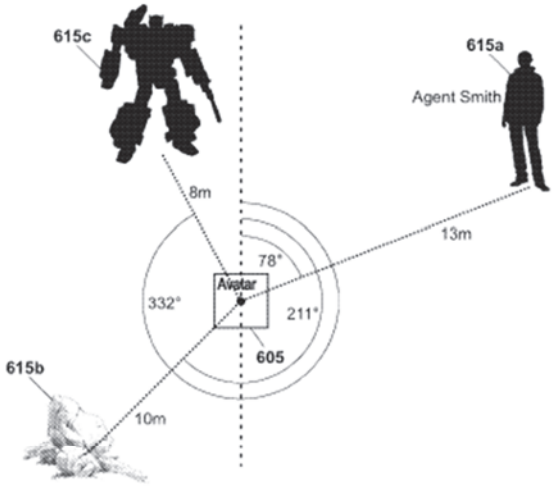


FIG. 5A

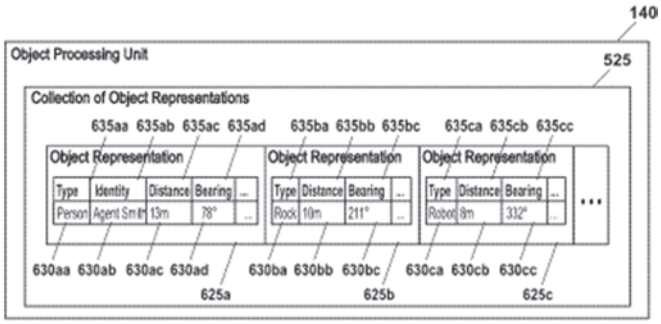


FIG. 5B

’743 Application at [Figs. 5A-5B].

As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc.

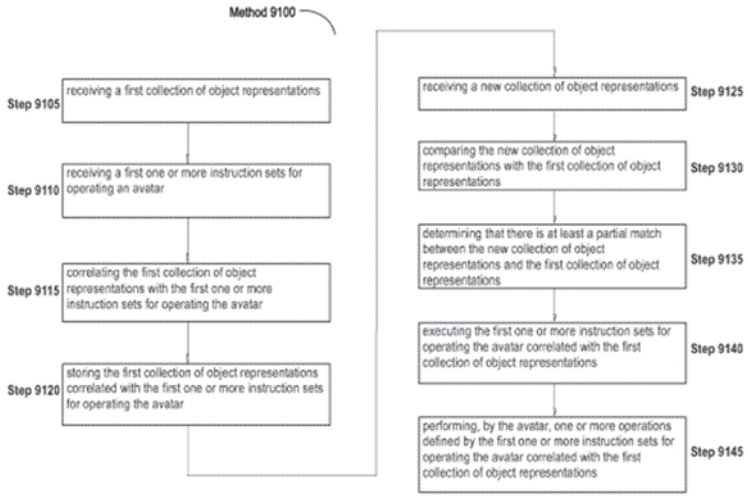
’743 Application at [73:27-29].

At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may

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	include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or information. In some designs, an object representation includes a representation of an object (i.e. Object 615, etc.) in an avatar's (i.e. Avatar's 605, etc.) surrounding within an application (i.e. Application Program 18, etc.). In other designs, an object representation includes a representation of an object of an application. '743 Application at [135:29-34]. The artificial intelligence unit may be configured to: receive a first collection of object representations, the first collection of object representations including one or more object representations representing one or more objects of the application. '743 Application at [1:27-29].
generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;	The '743 Application supports "generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application." For example, the '734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs,

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	Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar's 605 surrounding within Application Program 18. '743 Application at [62:14-22]. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier's 605a surrounding. '743 Application at [147:33-35]. In the future, ACAAO Unit 110 may compare incoming Collections of Object Representations 525 representing Objects 615 in Soldier's 605a surrounding with previously learned Collections of Object Representations 525 including optionally using any Extra Info 527 for enhanced decision making. '743 Application at [148:5-8].  FIG. 30 '743 Application at [Fig. 30].

At step 9125, a new collection of object representations is received.

’743 Application at [140:3-3].

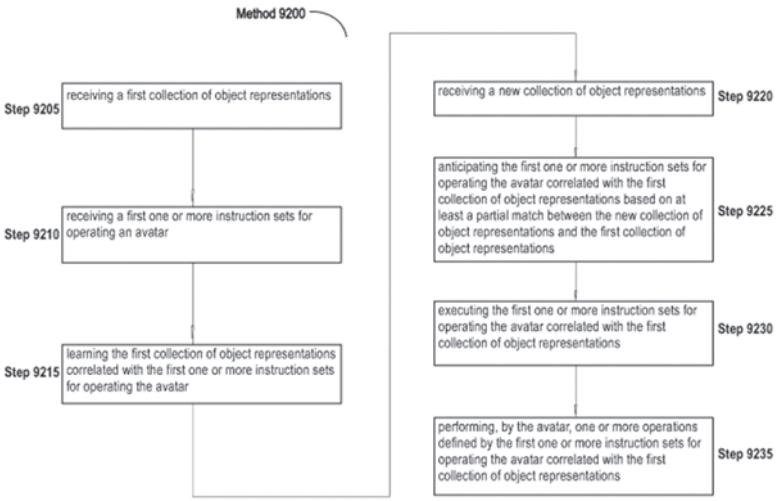


FIG. 31

’743 Application at [Fig. 31].

At step 9220, a new collection of object representations is received.

’743 Application at [144:4-4].

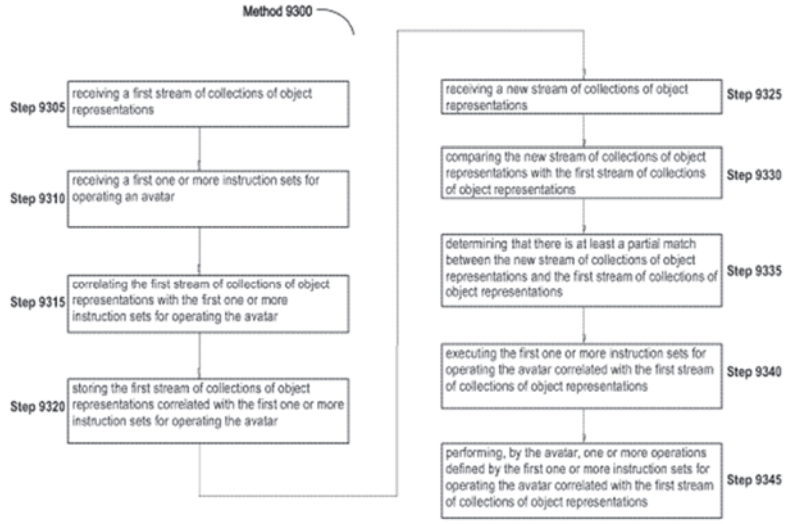


FIG. 32

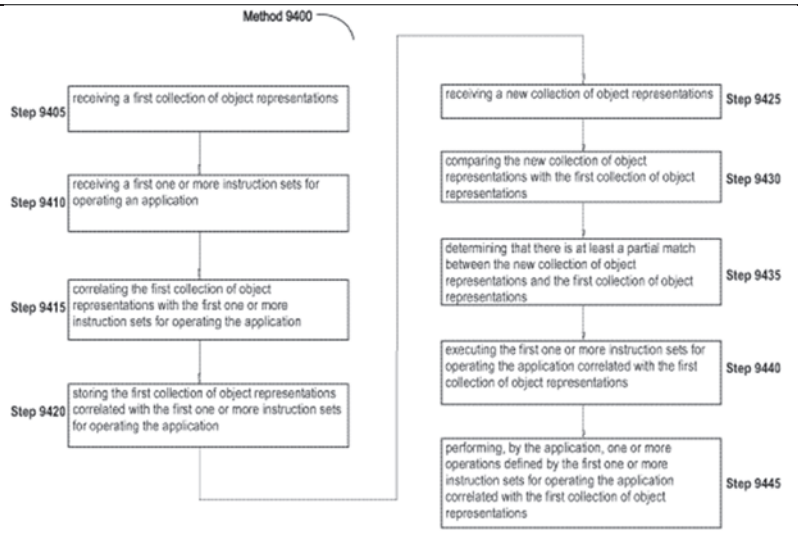


FIG. 33

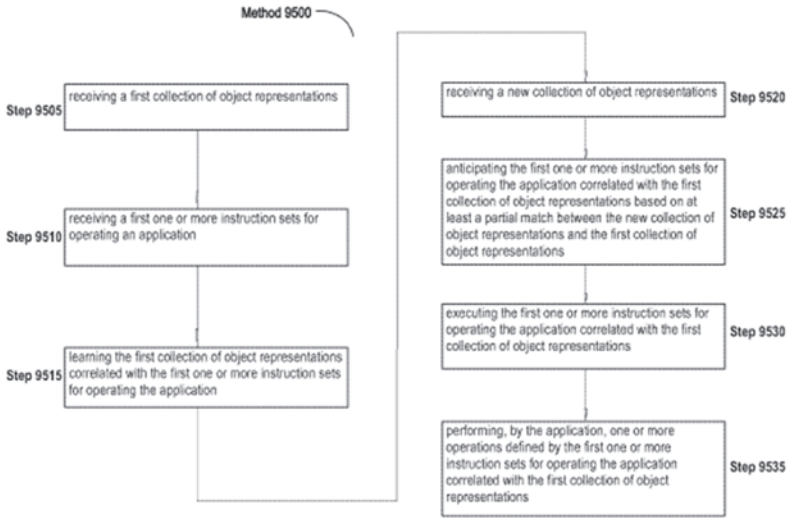


FIG. 34

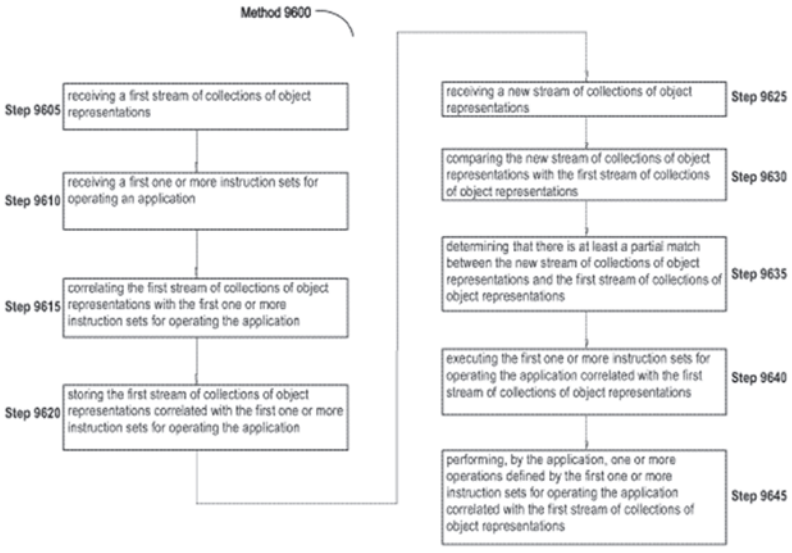
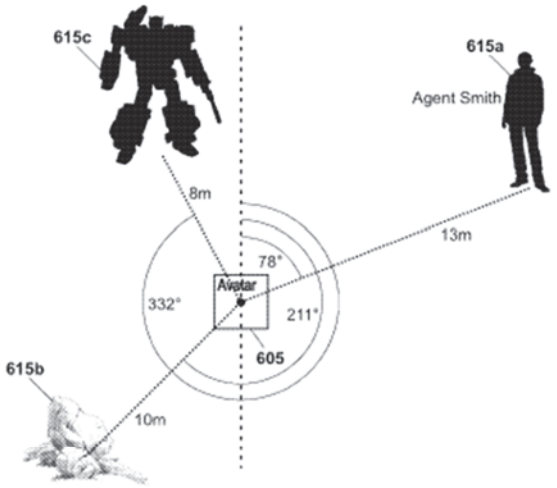
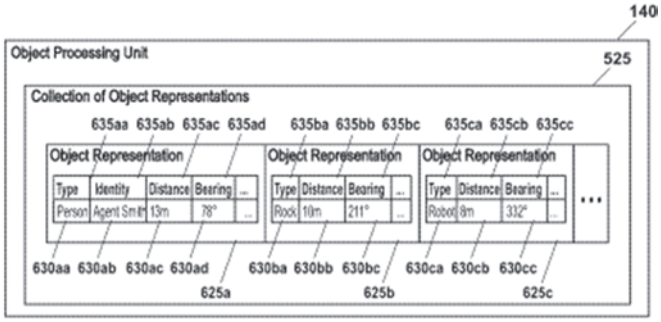
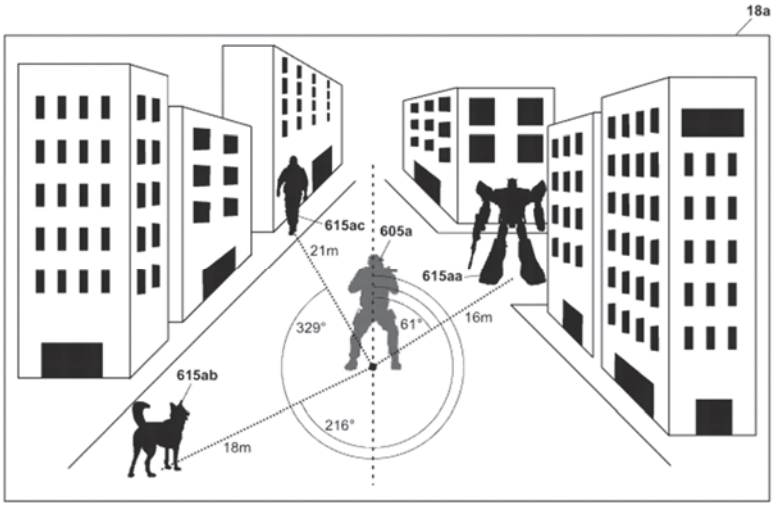


FIG. 35

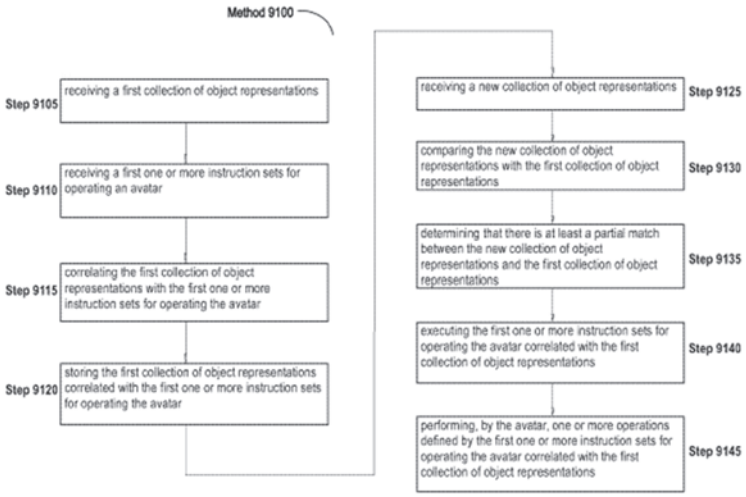
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	’743 Application at [Figs. 32-35].  FIG. 5A  FIG. 5B ’743 Application at [Figs. 5A-5B]. As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. ’743 Application at [73:27-29].
determining the first one or more instruction sets for operating the first avatar of the	The ’743 Application supports “determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations.” For example,

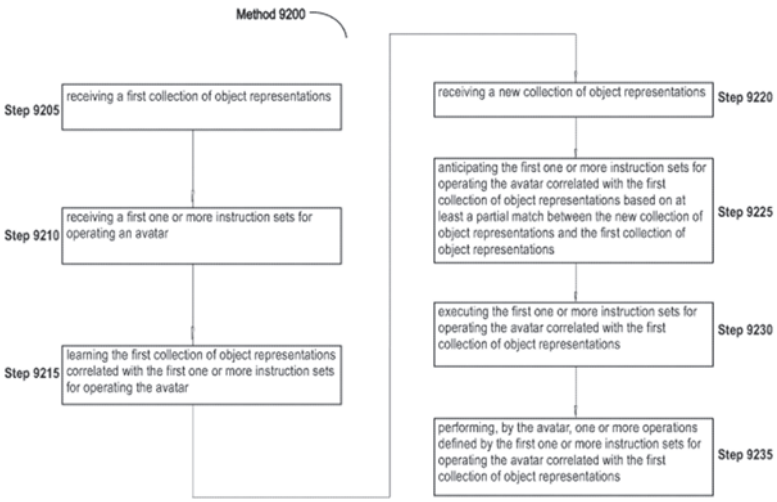
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application based on at least partial match between the second one or more object representations and the first one or more object representations; and	the ’734 Application discloses:  FIG. 36 ’743 Application at [Fig. 36]. In the future, ACAAO Unit 110 may compare incoming Collections of Object Representations 525 representing Objects 615 in Soldier’s 605a surrounding with previously learned Collections of Object Representations 525 including optionally using any Extra Info 527 for enhanced decision making. If substantially similar or at least a partial match is found or determined, ACAAO Unit 110 may cause the Instruction Sets 526 correlated with the previously learned Collections of Object Representations 525 to be executed, thereby enabling autonomous operation of Soldier 605a in similar circumstances as in previously learned ones. For instance, ACAAO Unit 100 may learn User SO-directed shooting at Opponent 615aa by Soldier 605a in a circumstance that includes Opponent 615aa, Dog 615ab, Pedestrian 615ac, and/or other Objects 615 among which Soldier 605a may need to maneuver and/or with which Soldier 605a may need to interact, as shown. In the future, when a circumstance that includes one or more Objects 615 with similar Object Properties 630 is encountered, ACAAO Unit 100 may implement the shooting at Opponent 615aa by Soldier 605a

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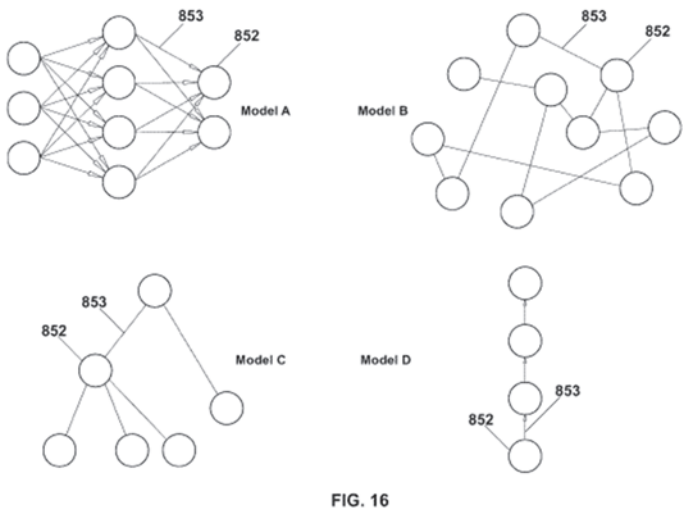
	autonomously. ’743 Application at [148:5-16].  FIG. 30 ’743 Application at [Fig. 30]. At step 9135, a determination is made that there is at least a partial match between the new collection of object representations and the first collection of object representations. ’743 Application at [140:33-34]. Decision-making Unit 540 comprises the functionality for anticipating or determining Avatar’s 605 operation in circumstances including objects with various properties. Decision-making Unit 540 comprises the functionality for anticipating or determining Instruction Sets 526 to be used or executed in Avatar’s 605 autonomous operation. ’743 Application at [114:31-34]. In some aspects, Decision-making Unit 540 may anticipate or determine Instruction Sets 526 (i.e. anticipatory Instruction Sets 526, etc.) for autonomous Avatar 605 operation by performing Similarity

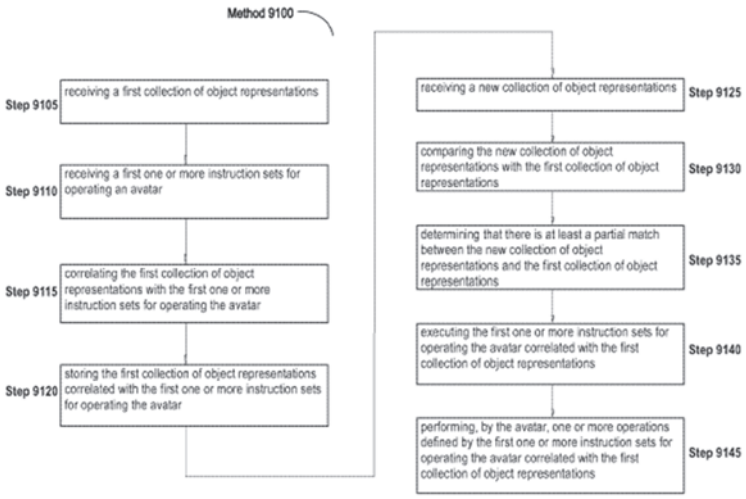
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	Comparisons 125 of incoming Collections of Object Representations 525 or portions thereof from Object Processing Unit 140 with Collections of Object Representations 525 or portions thereof from Knowledge Cells 800 in Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). '743 Application at [114:38-115:4]. Similarity Comparison 125 may include functions, rules, and/or logic for performing matching or comparisons and for determining that while a perfect match is not found, a partial or similar match has been found. '743 Application at [100:34-36]. Similarity Comparison 125 enables comparing circumstances including objects with various properties and determining their similarity or match. '743 Application at [101:12-13].  FIG. 31 '743 Application at [Fig. 31].

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	At step 9225, the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are anticipated based on at least a partial match between the new collection of object representations and the first collection of object representations. Step 9225 may include any action or operation described in Step 9130 and/or Step 9135 of method 9100 as applicable. '743 Application at [144:6-9]. Artificial Intelligence Unit 110 comprises the functionality for anticipating one or more instruction sets, data, and/or other information. Artificial intelligence Unit 110 comprises the functionality for anticipating one or more Instruction Sets 526 (i.e. anticipatory Instruction Sets 526, etc.) based on one or more incoming Collections of Object Representations 525 representing Objects 615 in Avatar's 605 surrounding. The one or more Instruction Sets 526 (i.e. anticipatory Instruction Sets 526, etc.) may be used or executed in Avatar's 605 autonomous operation. '743 Application at [88:35-39]. The artificial intelligence unit may be further configured to: anticipate the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations based on at least a partial match between the new collection of object representations and the first collection of object representations. '743 Application at [1:34-37].

	 FIG. 16 ’743 Application at [Fig. 16].
at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application;	The ’743 Application supports “at least in response to the determining, causing the first avatar of the application or a second avatar of the application to perform one or more operations defined by the first one or more instruction sets for operating the first avatar of the application at least by executing the first one or more instruction sets for operating the first avatar of the application.” For example, the ’734 Application discloses: The artificial intelligence unit may be further configured to: cause the processor circuit to execute the fast one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations, the causing performed in response to the anticipating of the artificial intelligence unit, wherein the avatar of the application performs one or more operations denned by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations. ’743 Application at [1:37-2:3]. The method may further comprise: (f) executing the first one or more instruction sets for operating the avatar of the application correlated with the first collection of

	object representations, the executing of (f) performed in response to the anticipating of (e). The method may further comprise: (g) performing, by the avatar of the application, one or more operations defined by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations. '743 Application at [16:25-29].  FIG. 30 '743 Application at [Fig. 30]. At step 9140, the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are executed. An instruction set can be executed by a processor and/or other processing element Executing can be performed in response to the aforementioned determining. '743 Application at [142:10-12]. At step 9145, one or more operations defined by the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are performed by the avatar.

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	’743 Application at [143:17-18].
Support for Limitation(s) Unique to Substitute Claim 21 (which is based on Original Claim 3)	
wherein the determining the first one or more instruction sets for operating the first avatar of the application based on the at least partial match between the second one or more object representations and the first one or more object representations includes: determining that a number of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold number, or determining that a percentage of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold percentage;	The ’743 Application supports “wherein the determining the first one or more instruction sets for operating the first avatar of the application based on the at least partial match between the second one or more object representations and the first one or more object representations includes: determining that a number of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold number, or determining that a percentage of at least partially matching portions of the second one or more object representations and portions of the first one or more object representations exceeds a threshold percentage.” For example, the ’734 Application discloses: The substantial similarity may be achieved when a number or a percentage of matching or partially matching portions of the new collection of object representations and portions of the first collection of object representations exceeds a threshold number or threshold percentage. ’743 Application at [8:25-27]. In another example, substantial similarity can be achieved when at least a threshold number (i.e. 1, 2, 4, 7, 18, etc.) or percentage (i.e. 41 %, 62%, 79%, 85%, 93%, etc.) of Object Representations 625 or portions thereof from the compared Collections of Object Representations 525 match or substantially match. Similarly, substantial similarity can be achieved when the number or percentage of matching or substantially matching Object Representations 625 or portions thereof from the compared Collections of Object Representations 525 exceeds a threshold number (i.e. 1, 2, 4, 7, 18, etc.) or a threshold percentage (i.e. 41 %,

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	62%, 79%, 85%, 93%, etc.). ’743 Application at [102:3-9].
Support for Limitations Common to Each Substitute Claim (Limitations Added to Each Substitute Claim)	
wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, and	The ’743 Application supports “wherein the first one or more object representations comprise: a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar’s 605 surrounding within Application Program 18. ’743 Application at [62:14-22].

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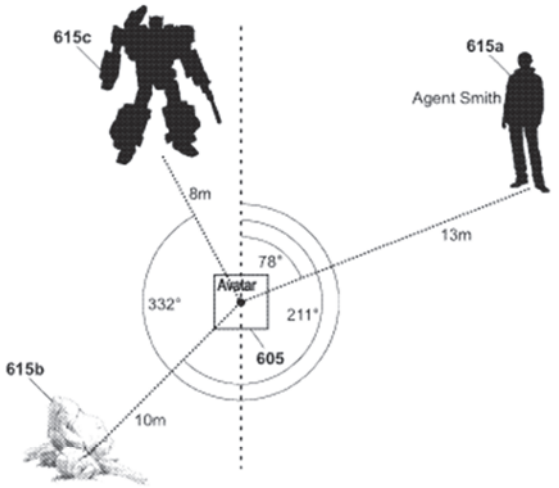


FIG. 5A

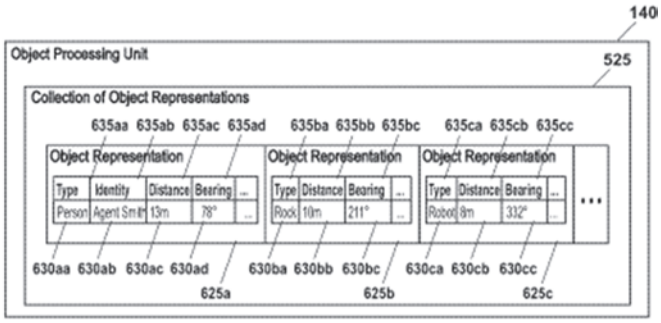


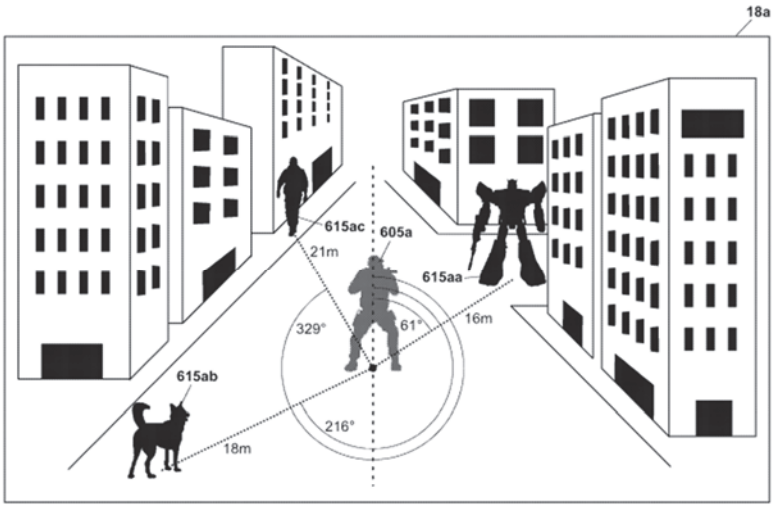
FIG. 5B

’743 Application at [Figs. 5A-5B].

As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc.

’743 Application at [73:27-29].

At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or information.

	’743 Application at [135:29-31].  FIG. 36 ’743 Application at [Fig. 36 - “first 3D object of application”: Opponent 615aa; “second 3D object of the application”: Dog 615ab]. Referring to Fig. 36, in some exemplary embodiments, Application Program 18 may be or include a 30 Computer Game 18a. ’743 Application at [147:25-26]. ACAAO Unit 100 can obtain objects (i.e. Opponent 615aa, Dog 615ab, Pedestrian 615ac, etc.) and/or their properties in Soldier’s 605a surrounding within 3D Computer Game 18a. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier’s 605a surrounding. ’743 Application at [147:32-35]. Examples of Objects 615 (also referred to simply as

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objects, etc.) include models of a person, animal, tree, rock, building, vehicle, and/or others in a context of a computer game, virtual world, 3D or 2D graphics Application Program 18, and/or others. More generally, examples of Objects 615 include a 2D model, a 3D model, a 2D shape (i.e. point. line, square, rectangle, circle, triangle, etc.), a 3D shape (i.e. cube, sphere, etc.), a graphical user interface (GUI) element, a form element (i.e. text field, radio button, push button, check box, etc.), a data or database element, a spreadsheet element, a link, a picture, a text (i.e. character, word, etc.), a number, and/or others in a context of a web browser, a media application, a word processing application, a spreadsheet application, a database application, a forms-based application, an operating system, a device/system control application, and/or others. Object 615 may perform operations within Application Program 18.

’743 Application at [63:12-20].

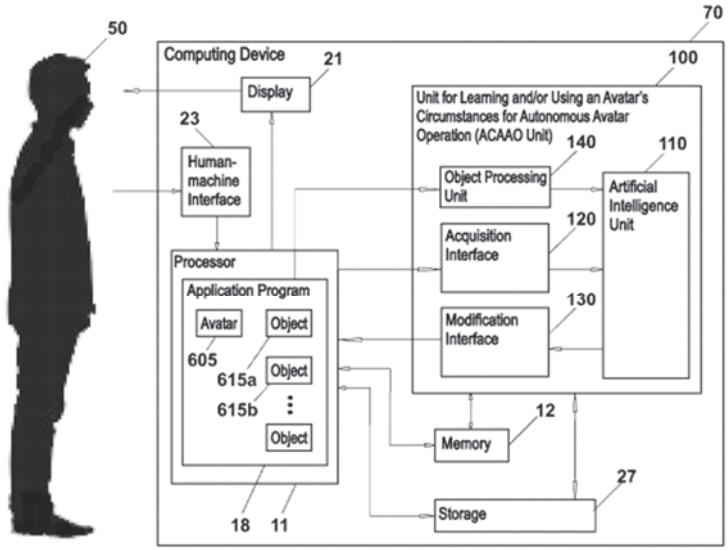
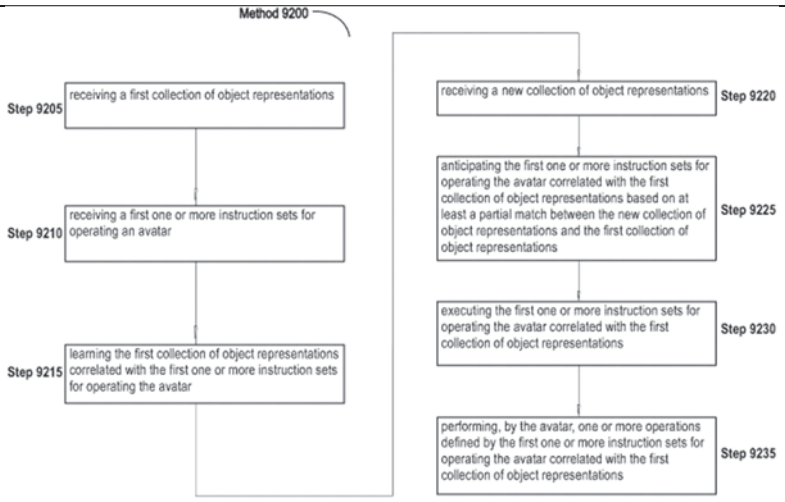
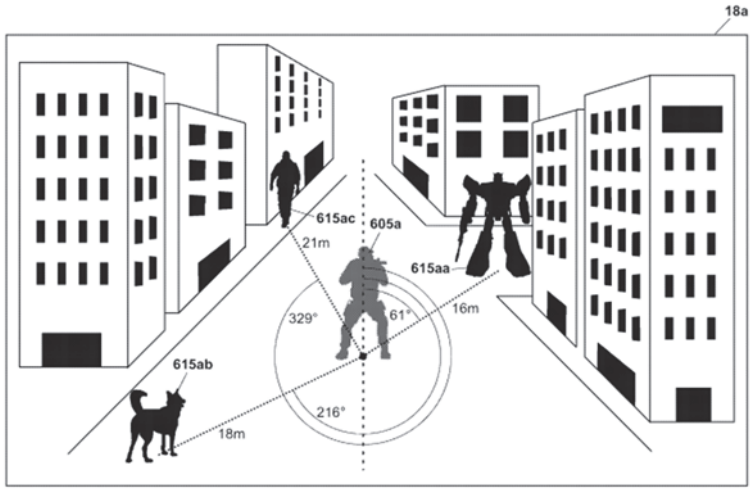
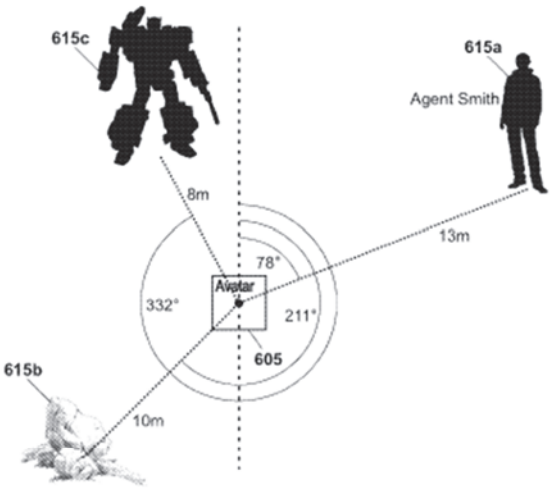
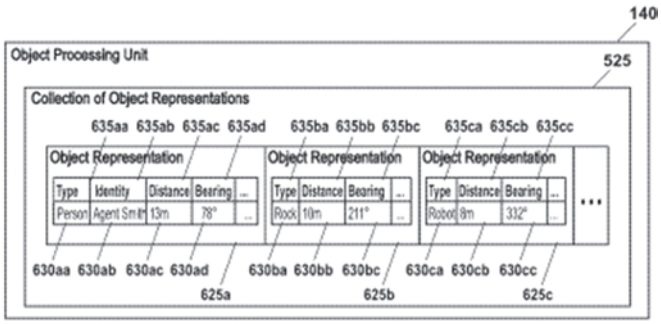


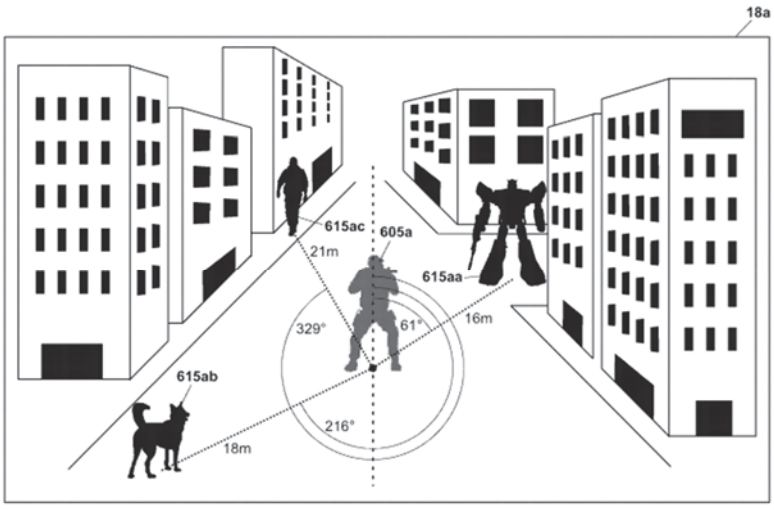
FIG. 2

	 FIG. 31  FIG. 36 ’743 Application at [Figs. 2, 31, 36 - overall system].
wherein the first object representation includes a first data structure that: is generated at least in response to processing a type and a location of the first 3D object, and	The ’743 Application supports “wherein the first object representation includes a first data structure that: is generated at least in response to processing a type and a location of the first 3D object,.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object

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	representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar's 605 surrounding within Application Program 18. '743 Application at [62:14-22].  FIG. 5A  FIG. 5B '743 Application at [Figs. 5A-5B].

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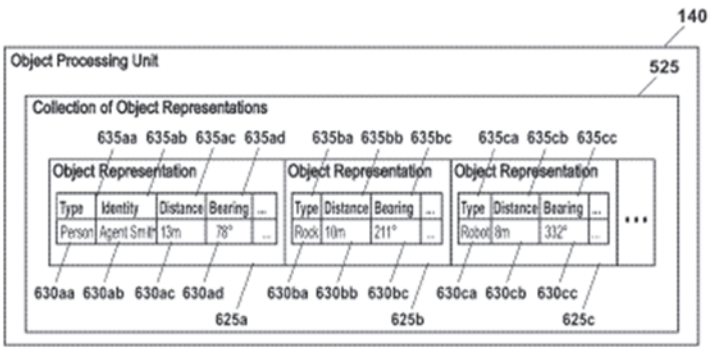
	As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. '743 Application at [73:27-29]. Object Processing Unit 140 comprises the functionality for obtaining information of interest on objects of Application Program 18, and/or other functionalities. '743 Application at [62:9-11]. In some embodiments, Object Processing Unit 140 can be utilized for obtaining properties of Objects 615 in Avatar's 605 surrounding within Application Program 18. '743 Application at [64:8-9].  FIG. 36 '743 Application at [Fig. 36 - "first 3D object of application": Opponent 615aa]. ACAAO Unit 100 can obtain objects (i.e. Opponent

	615aa, Dog 615ab, Pedestrian 615ac, etc.) and/or their properties in Soldier's 605a surrounding within 3D Computer Game 18a. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier's 605a surrounding. '743 Application at [147:32-35]. Examples of Object Properties 630 (i.e. also referred to simply as object properties, etc.) include existence of Object 615, type of Object 615 (i.e. person, animal, tree, rock, building, vehicle, etc.), identity of Object 615 (i.e. 35 name, identifier, etc.), distance of Object 615, bearing/angle of Object 615, location of Object 615 (i.e. distance and bearing/angle from a known point, coordinates, etc,), shape/size of Object 615 (i.e, scale, height, width, depth, computer model, etc.), activity of Object 615 (i.e. motion, gestures, etc.), and/or other prope1iies of Object 615. '743 Application at [63:33-37] Examples of object properties include existence of an object, type of an object 35 (i.e. person, animal, tree, rock, building, vehicle, etc.), identity of an object (i.e. name, identifier, etc.), distance of an object bearing/angle of an object, location of an object (i.e. distance and bearing/angle from a known point, coordinates, etc.), shape/size of an object (i.e. scale, height, width, depth, computer model, etc.), activity of an object (i.e. motion, gestures, etc.), and/or other properties of an object. '743 Application at [136:34-38] In other aspects, type or other classification (i.e. person, animal, tree, rock, building, vehicle, etc.) of Object 615

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	in a 2D or 3D engine or environment can be obtained by utilizing functions such as GetClassName(ObjectN) or ObjectN.getType() in Unity 3D Engine; ActorN.GetClass() in Unreal Engine; ObjectN.getClassName() or ObjectN.getType() in Torque 3D Engine; and/or other functions, procedures, or methods in other 2D or 3D engines or environments. '743 Application at [64:15-19] In further aspects, location of Object 615 in a 2D or 3D engine or environment can be obtained by utilizing functions such as ObjectN.transform.position in Unity 30 Engine; ActorN.GetActorlocation() in 35 Unreal Engine; ObjectN.getPosition() in Torque 3D Engine; and/or other similar functions, procedures, or methods in other 2D or 3D engines or environments. In another example, location (i.e. coordinates, etc.) of Object 615 on a screen can be obtained by utilizing WorldToScreen() or other similar function or method in various 2D or 3D engines or environments. '743 Application at [64:33-38]
comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object, and	The '743 Application supports "and comprises a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object." For example, the '734 Application discloses: Examples of Object Properties 630 (i.e. also referred to simply as object properties, etc.) include existence of Object 615, type of Object 615 (i.e. person, animal, tree, rock, building, vehicle, etc.), identity of Object 615 (i.e. name, identifier, etc.), distance of Object 615, bearing/angle of Object 615, location of Object 615 (i.e. distance and bearing/angle from a known point, coordinates, etc.), shape/size of Object 615 (i.e. scale, height, width, depth, computer model, etc.), activity of Object 615 (i.e. motion, gestures, etc.), and/or other properties of Object 615.

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	’743 Application at [63:33-37]. At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or information. Examples of object properties include existence of an object, type of an object (i.e. person, animal, tree, rock, building, vehicle, etc.), identity of an object (i.e. name, identifier, etc.), distance of an object bearing/angle of an object, location of an object (i.e. distance and bearing/angle from a known point, coordinates, etc.), shape/size of an object (i.e. scale, height, width, depth, computer model, etc.), activity of an object (i.e. motion, gestures, etc.), and/or other properties of an object. ’743 Application at [136:34-38].  FIG. 5B ’743 Application at [Fig. 5B]. As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. For instance, Object

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	Representation 625a may include Object Property 630aa "Person" in Category 635aa "Type", Object Property 630ab "Agent Smith'' in Category 635ab "Identity", Object Property 630ac "13m" in Category 635ac ''Distance", Object Property 630ad "78°'' in Category 635ad "Bearing", etc. Also, Object Representation 625b may include Object Property 630ba "Rock" in Category 635ba "Type", Object Property 630bb "1 Om" in Category 635bb "Distance", Object Property 630bc "211 °" in Category 635bc "Bearing", etc. Also, Object Representation 625c may include Object Property 630ca "Robot" in Category 635ca ''Type", Object Property 630cb "8m'' in Category 635cb "Distance", Object Property 630cc "332°" in Category 635cc "Bearing", etc. '743 Application at [73:27-36]. In other aspects, type or other classification (i.e. person, animal, tree, rock, building, vehicle, etc.) of Object 615 in a 2D or 3D engine or environment can be obtained by utilizing functions such as GetClassName(ObjectN) or ObjectN.getType() in Unity 3D Engine; ActorN.GetClass() in Unreal Engine; ObjectN.getClassName() or ObjectN.getType() in Torque 3D Engine; and/or other functions, procedures, or methods in other 2D or 3D engines or environments. '743 Application at [64:15-19]. In further aspects, location of Object 615 in a 2D or 3D engine or environment can be obtained by utilizing functions such as ObjectN.transform.position in Unity 30 Engine; ActorN.GetActorlocation() in Unreal Engine; ObjectN.getPosition() in Torque 3D Engine; and/or other similar functions, procedures, or methods in other 2D or 3D engines or environments. In another example, location (i.e. coordinates, etc.) of Object 615 on a screen can be obtained by utilizing WorldToScreen() or other similar function or method in various 2D or 3D engines or environments.

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	’743 Application at [64:33-38].
wherein the second object representation includes a second data structure, and	The ’743 Application supports “and wherein the second object representation includes a second data structure.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar’s 605 surrounding within Application Program 18. ’743 Application at [62:14-22].

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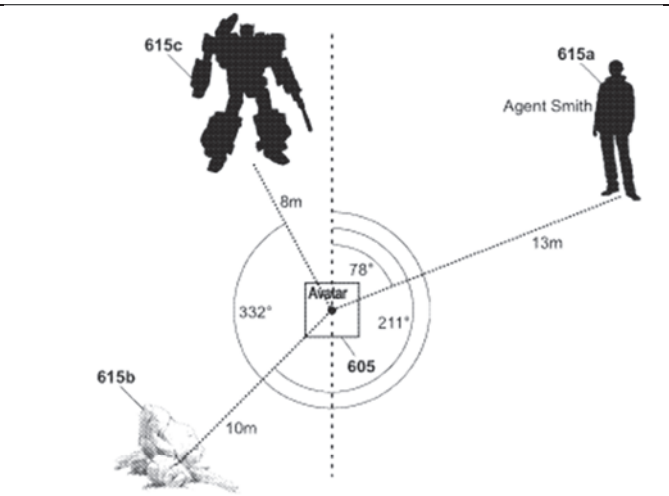


FIG. 5A

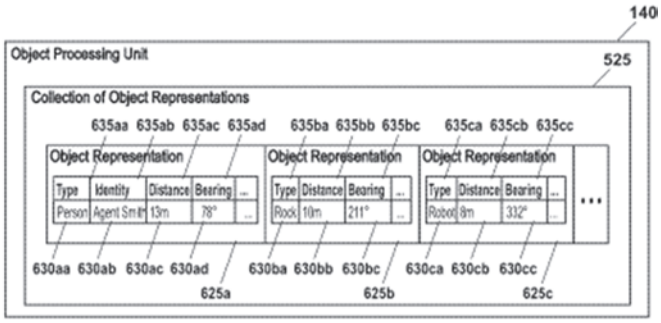


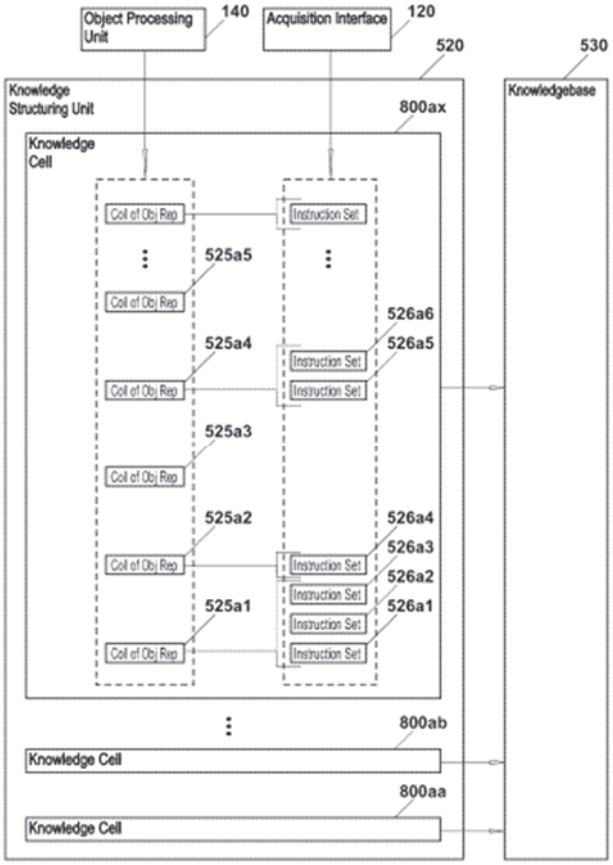
FIG. 5B

’743 Application at [Figs. 5A-5B].

As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc.

’743 Application at [73:27-29].

At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or information.

	’743 Application at [135:29-31].
wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.	The ’743 Application supports “and wherein the first data structure and the second data structure are correlated with the first one or more instruction sets for operating the first avatar of the application.” For example, the ’734 Application discloses:  FIG. 12 ’743 Application at [Fig. 12]. For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527

	(not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].

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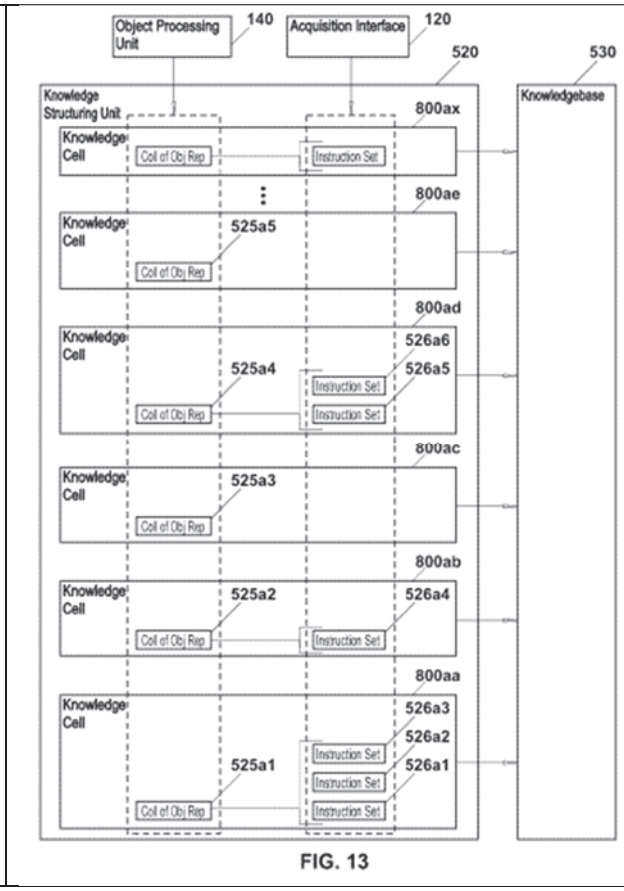


FIG. 13

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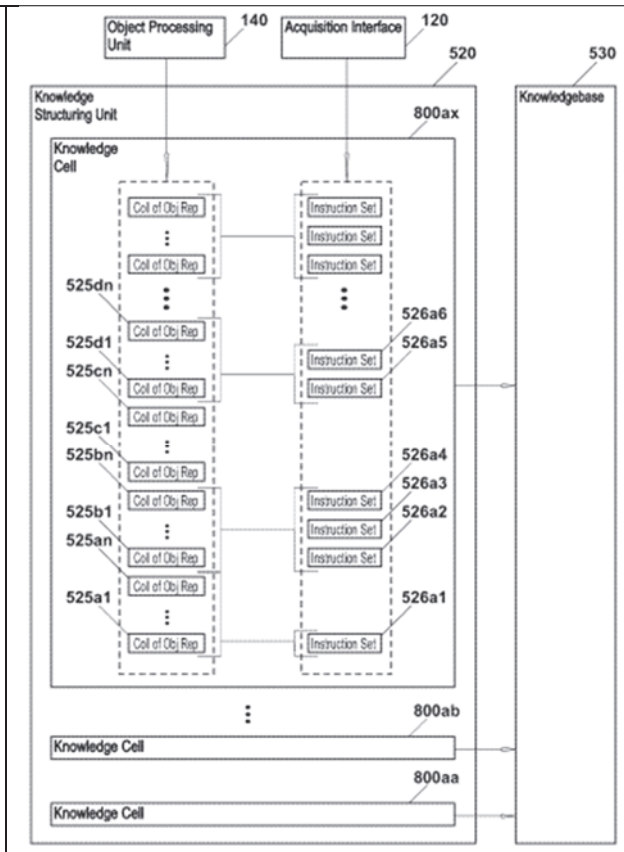


FIG. 14

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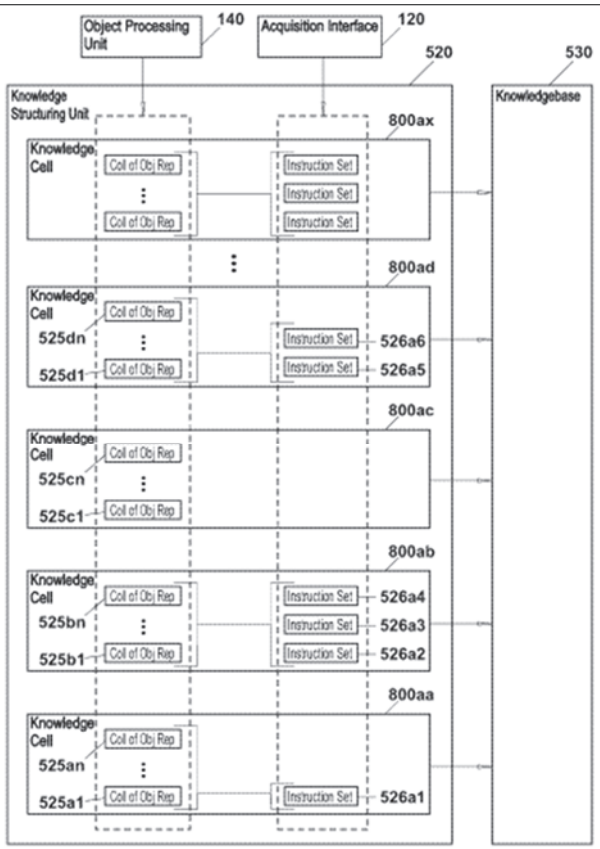


FIG. 15

’743 Application at [Figs. 13-15].

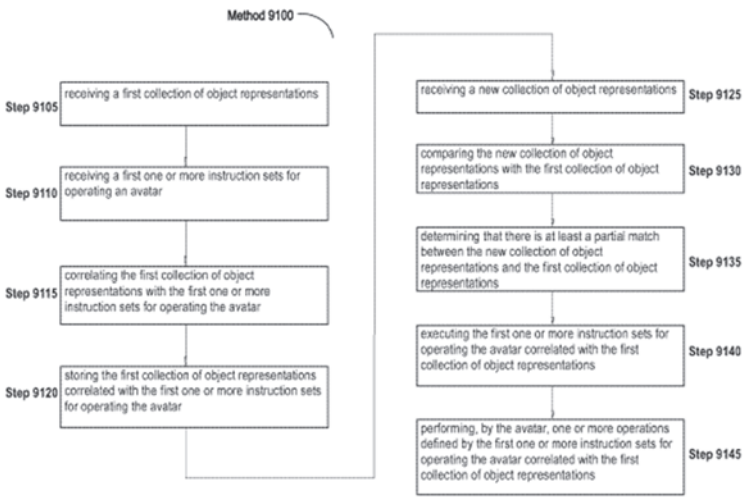
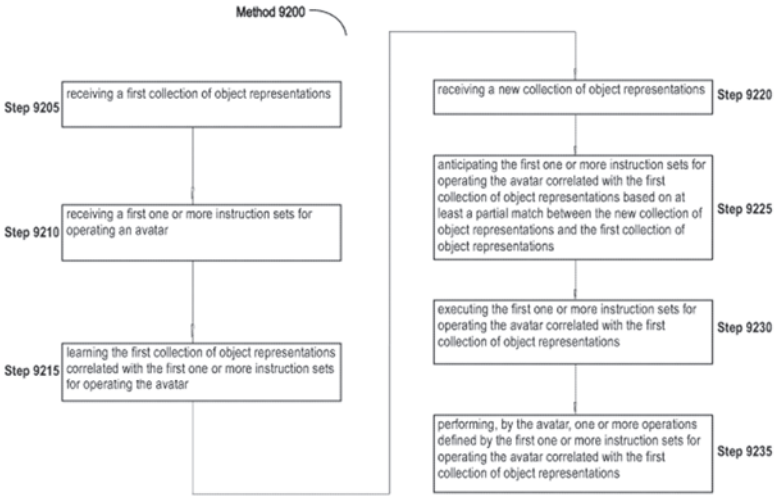
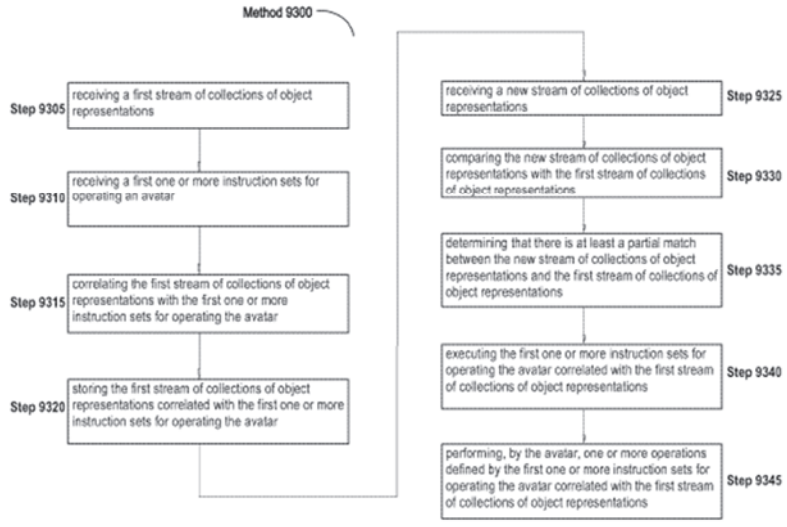


FIG. 30

’743 Application at [Fig. 30].

	A collection of object representations correlated with one or more instruction sets may be part of a stored plurality of collections of object representations correlated with one or more instruction sets. '743 Application at [139:13-15].  FIG. 31  FIG. 32

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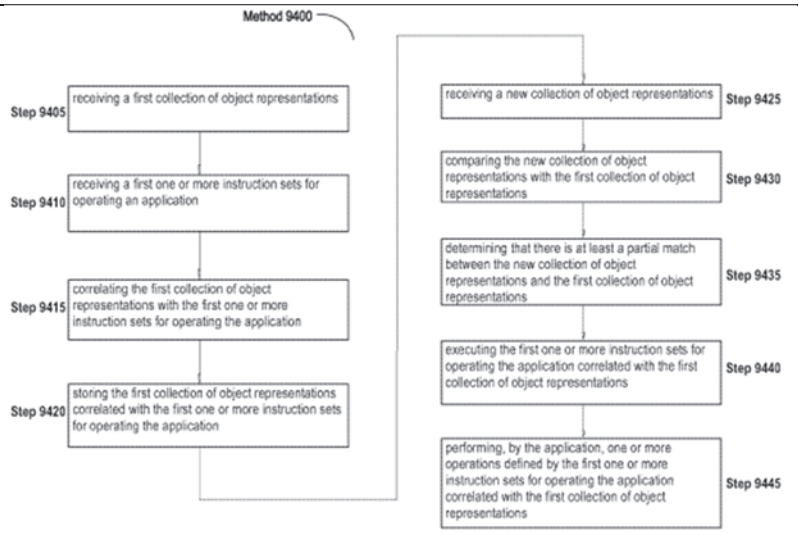


FIG. 33

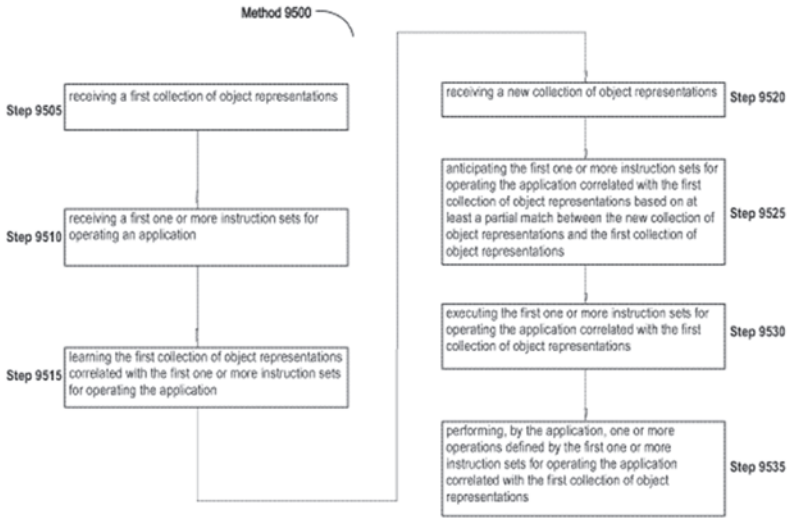


FIG. 34

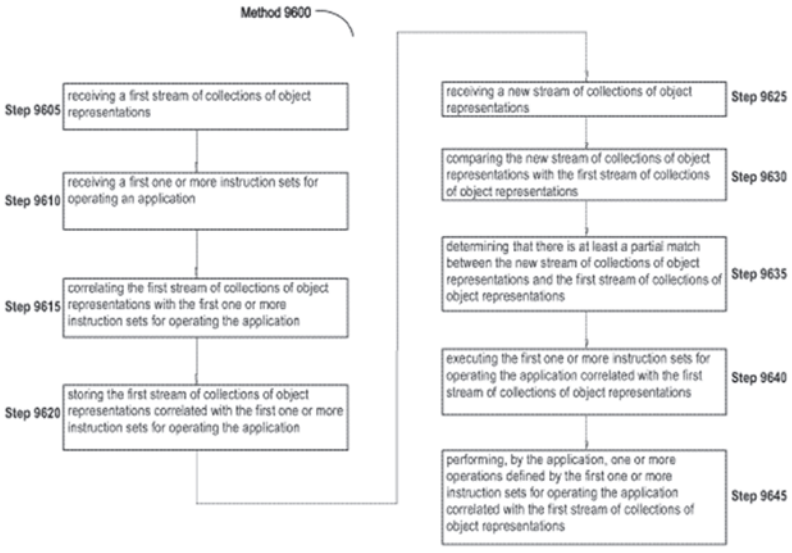
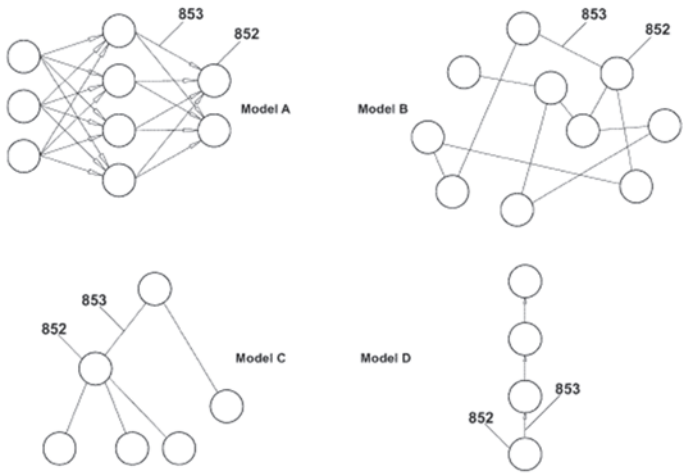
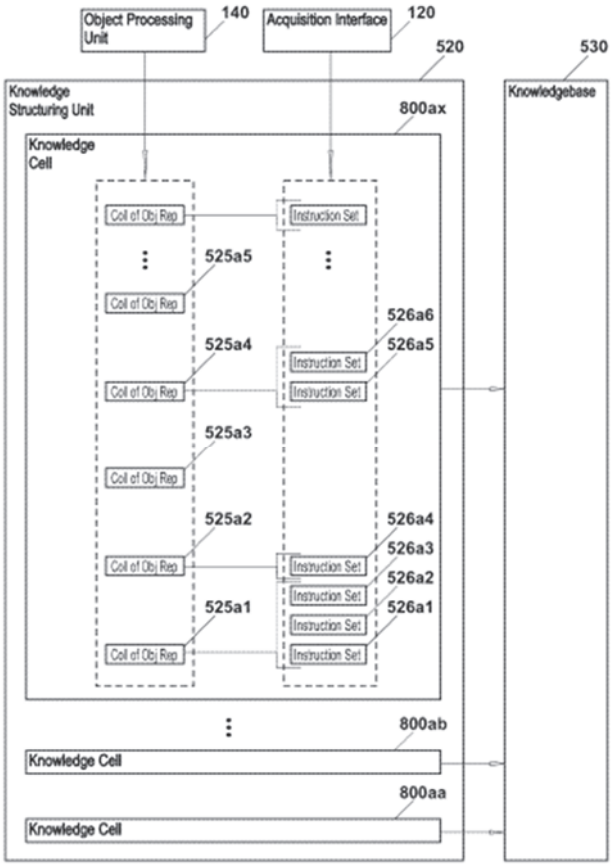


FIG. 35

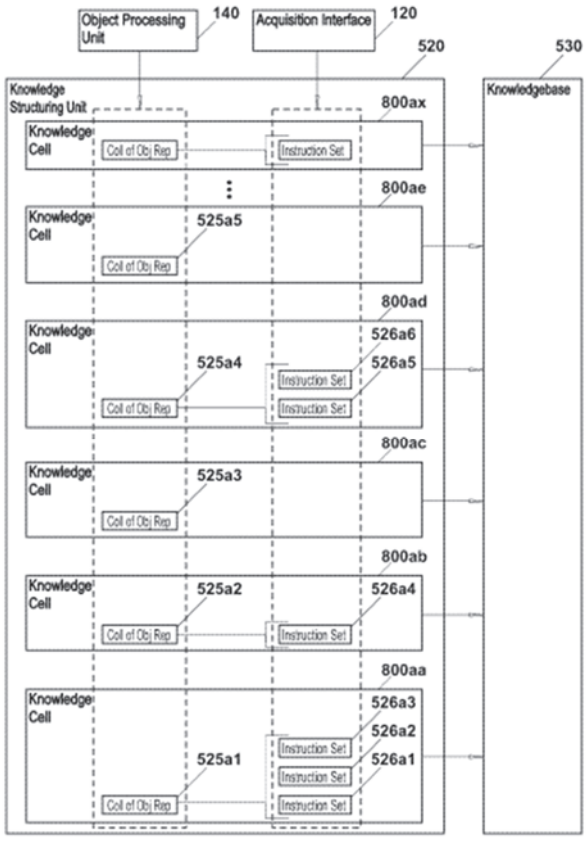
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	’743 Application at [Figs. 31-35].  FIG. 16 ’743 Application at [Fig. 16].
Support for Limitation(s) Unique to Substitute Claim 22 (which is based on Original Claim 4)	
wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating: the first avatar of the application, the second avatar of the application, a third avatar of the application, or an	The ’743 Application supports “wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating: the first avatar of the application, the second avatar of the application, a third avatar of the application, or an avatar of another application.” For example, the ’734 Application discloses:

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avatar of another application,	 FIG. 12 ’743 Application at [Fig. 12]. For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown).

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	Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].  FIG. 13

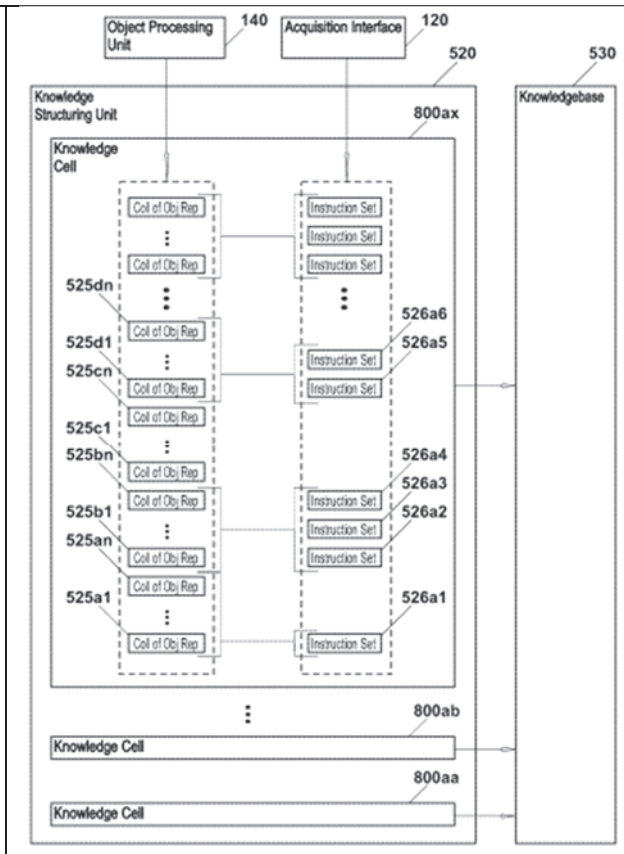


FIG. 14

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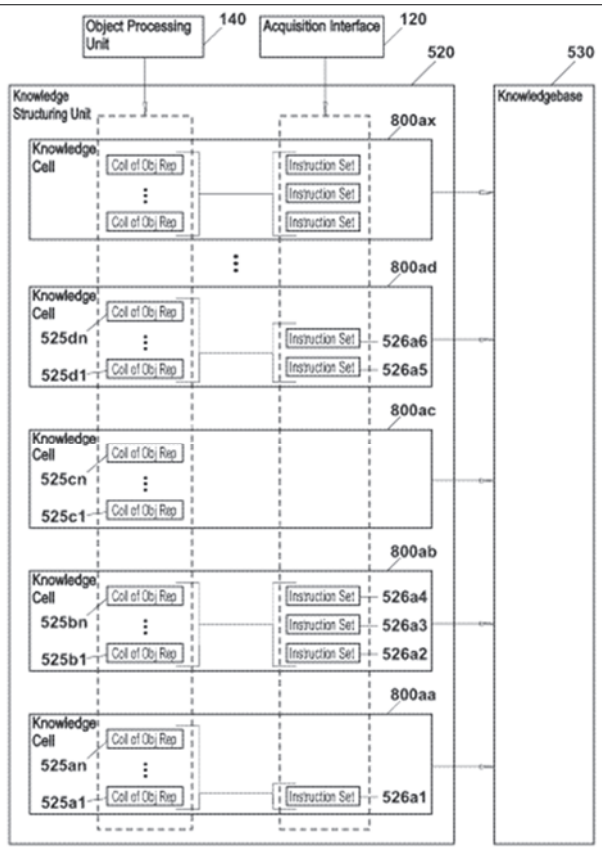


FIG. 15

’743 Application at [Figs. 13-15].

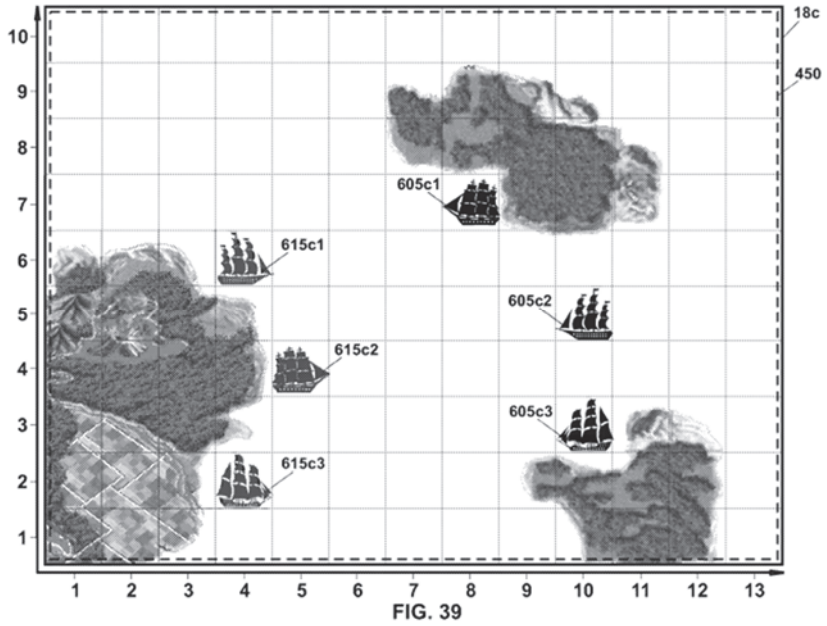
A collection of object representations correlated with one or more instruction sets may be part of a stored plurality of collections of object representations correlated with one or more instruction sets. Collections of object representations correlated with any instruction sets can be stored in a memory unit or other repository.

’743 Application at [139:13-16].

Any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Avatars 605 in circumstances including objects with various properties. In turn, any number of Computing Devices 70, Processors 11, Application Programs 18,

	and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. A remote ACAAO Unit 100 can be offered as a network service (i.e. on line application, etc.). In some aspects; a remote ACAAO Unit 100 (i.e. global ACAAO Unit 100, etc.) may reside on the Internet and be available to all the world's Computing Devices 70, Processors 11, Application Programs 18, and/or other elements configured to transmit operations of their Avatars 605 in circumstances including objects with various properties and/or configured to utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. For example, multiple players (i.e. Users 50, etc.) may operate their Avatars 605 in a computer game (i.e. Application Program 18, etc.) running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Avatar's 605 operations in circumstances including objects with various properties to a remote ACAA.O Unit 100. Such remote ACAAO Unit 100 enables learning of the players' collective knowledge of operating Avatar 605 in circumstances including objects with various properties. '743 Application at [87:34-88:8]. In such embodiments, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Soldiers 605a in circumstances including objects with various properties. In tum, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Soldiers 605a. For example, multiple Users 50 (i.e. game players, etc.) may operate their Soldiers 605a in 3D Computer Game 18a running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may

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	be configured to transmit Soldiers' 605a operations in circumstances including objects with various properties to a remote ACAAO Unit 100. Such remote ACAAO Unit 100 enables learning of the game players' collective knowledge of operating Soldier 605a in circumstances including objects with various properties. '743 Application at [148:23-32].  FIG. 39 '743 Application at [Fig. 39 - "first avatar of application": Ship 605c1; "second avatar of the application": Ship 605c2; "third avatar of the application": Ship 605c3]. Referring to Fig. 39, in some exemplary embodiments, Application Program 18 may be or include a 2D Computer Game 18c comprising multiple Avatars 605 that User 50 can control or operate. '743 Application at [152:1-2]. ACAAO Unit 100 can obtain objects and/or their properties in Area of Interest 450 in 2D Computer Game 18c. For instance, Area of Interest 450 in 2D Computer

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	Game 18c may include Ships 605c1- 605c3, etc., Ships 615c1-615c3, etc., and/or other objects. Properties of each of the objects may include a location defined by coordinates. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Area of Interest 450 in 2D Computer Game 18c. ACAAO Unit 100 can also obtain Instruction Sets 526 used or executed in operating Ships 605c1-605c3, etc. ACAAO Unit 100 can also optionally obtain any Extra Info 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.) related to Ships' 605c1-605c3, etc. operation. As User 50 operates Ships 605c1-605c3, etc. in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Ships' 605c1-605c3, etc. operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Area of Interest 450 in 2D Computer Game 18c with one or more Instruction Sets 526 used or executed in operating Ships 605c1-605c3, etc. Any Extra Info 527 related to Ships' 605c1-605c3, etc. operation may also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). '743 Application at [152:14-29].

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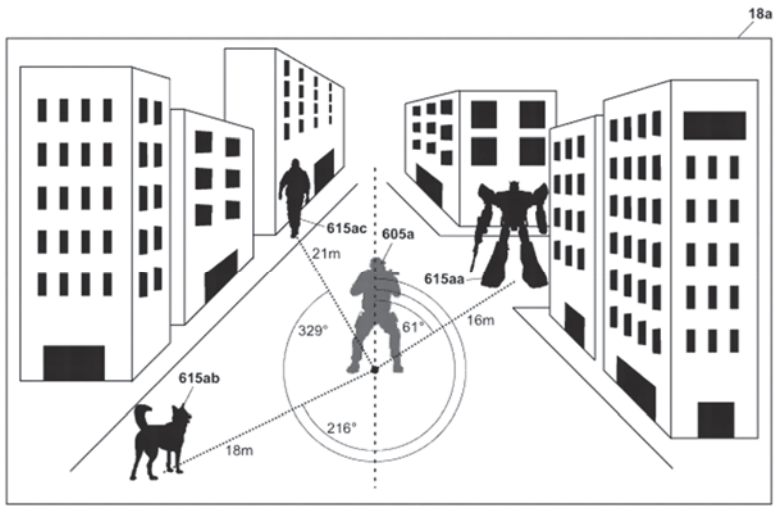
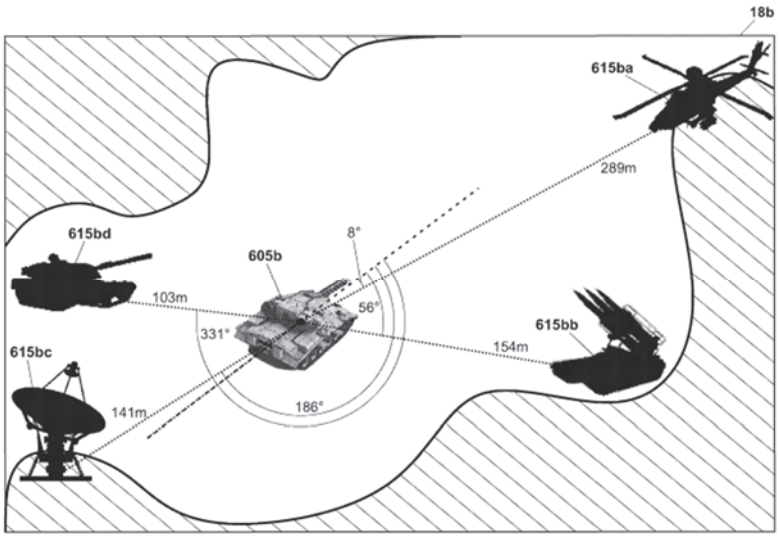


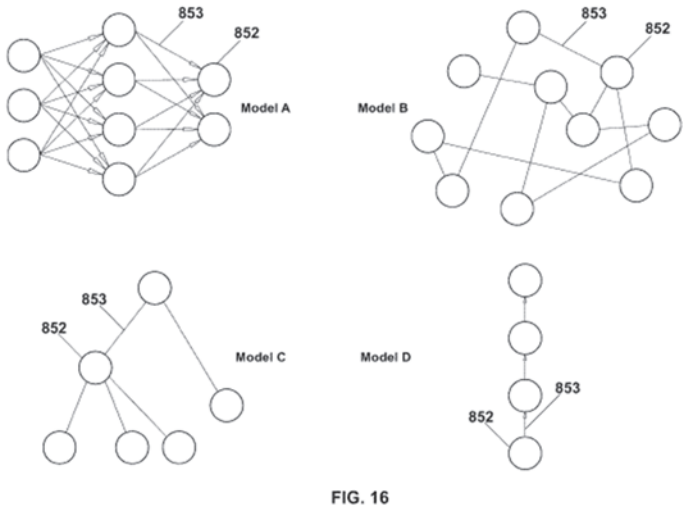
FIG. 36

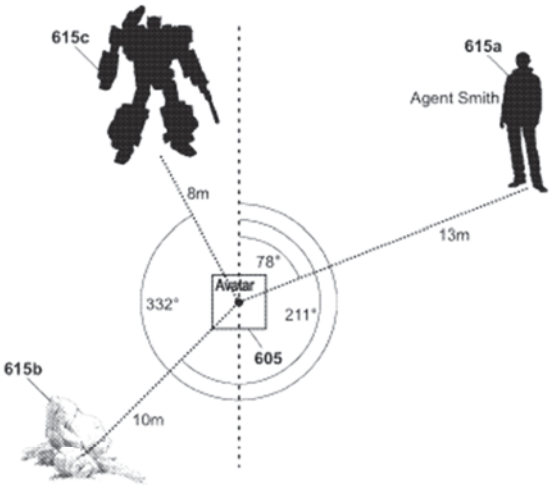
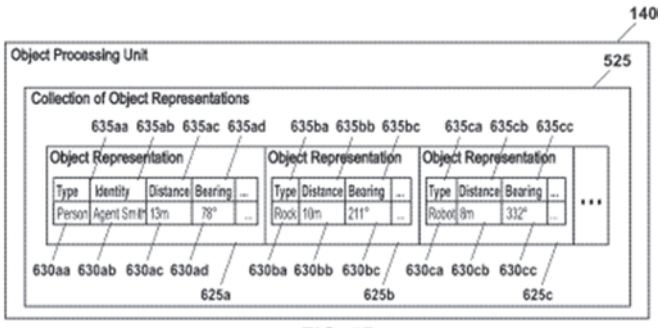
’743 Application at [Fig. 36 - “avatar of first application”: Soldier 605a of Computer Game 18a].

ACAAO Unit 100 can obtain objects (i.e. Opponent 615aa, Dog 615ab, Pedestrian 615ac, etc.) and/or their properties in Soldier’s 605a surrounding within 3D Computer Game 18a. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier’s 605a surrounding. ACAAO Unit 100 can also obtain instruction Sets 526 used or executed in operating Soldier 605a. ACAAO Unit 100 can also optionally obtain any Extra 111fo 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.) related to Soldier’s 605a operation. As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier’s 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier’s 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a. Any Extra Info 527 related to Soldier’s 605a operation may also optionally be correlated with Collections of Object

	Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.) '743 Application at [147:32-148:5].  FIG. 37 '743 Application at [Fig. 37 - "avatar of another application": Tank 605b of Computer Game 18b]. Computing Device 70 may include or be coupled to ACAAO Unit 100. ACAAO Unit 100 can obtain objects (i.e. Helicopter 615ba, Rocket Launcher 615bb, Communication Center 615bc, Tank 615bd, etc.) and/or their properties in Tank's 605b surrounding within 2D Computer Game 18b. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Tank's 605b surrounding. ACAAO Unit 100 can also obtain instruction Sets 526 used or executed in operating Tank 605b. ACAAO Unit 100 can also optionally obtain any Extra Info 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.)

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	related to Tank's 605b operation. As User 50 operates Tank 605b in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Tank's 605b operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Tank's 605b surrounding with one or more Instruction Sets 526 used or executed in operating Tank 605b. Any Extra Info 527 related to Tank's 605b operation may also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). '743 Application at [150:18-31].  FIG. 16 '743 Application at [Fig. 16].
and wherein the third one or more object representations represent one or more objects of: the application, or the another application,	The '743 Application supports "and wherein the third one or more object representations represent one or more objects of: the application, or the another application." For example, the '734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or

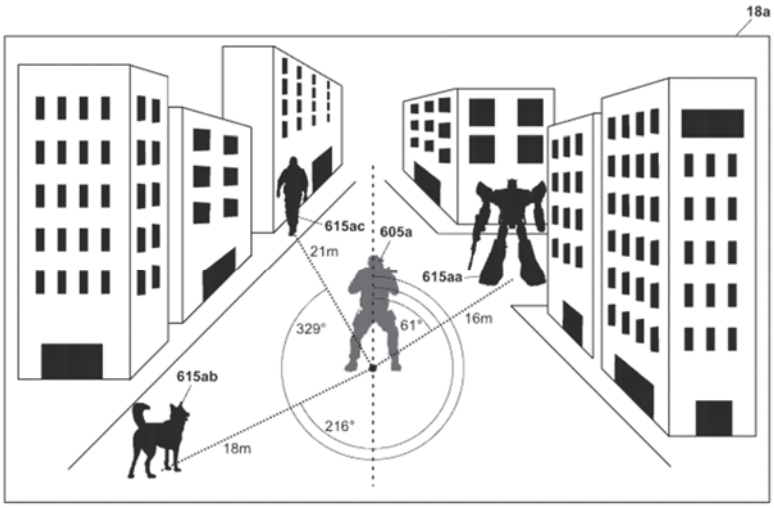
	reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar's 605 surrounding within Application Program 18. '743 Application at [62:14-22].  FIG. 5A  FIG. 5B

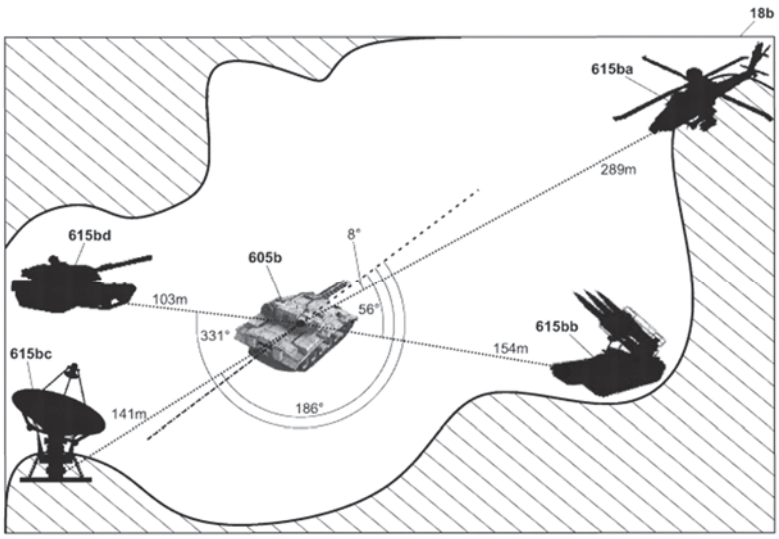
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	’743 Application at [Figs. 5A-5B]. As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. ’743 Application at [73:27-29]. At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or information. In some designs, an object representation includes a representation of an object (i.e. Object 615, etc.) in an avatar’s (i.e. Avatar’s 605, etc.) surrounding within an application (i.e. Application Program 18, etc.). In other designs, an object representation includes a representation of an object of an application. ’743 Application at [135:29-34]. The artificial intelligence unit may be configured to: receive a first collection of object representations, the first collection of object representations including one or more object representations representing one or more objects of the application. ’743 Application at [1:27-29]. Any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Avatars 605 in circumstances including objects with various properties. In turn, any number of Computing

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	Devices 70, Processors 11, Application Programs 18, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. A remote ACAAO Unit 100 can be offered as a network service (i.e. on line application, etc.). In some aspects; a remote ACAAO Unit 100 (i.e. global ACAAO Unit 100, etc.) may reside on the Internet and be available to all the world's Computing Devices 70, Processors 11, Application Programs 18, and/or other elements configured to transmit operations of their Avatars 605 in circumstances including objects with various properties and/or configured to utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. For example, multiple players (i.e. Users 50, etc.) may operate their Avatars 605 in a computer game (i.e. Application Program 18, etc.) running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Avatar's 605 operations in circumstances including objects with various properties to a remote ACAA.O Unit 100. Such remote ACAAO Unit 100 enables learning of the players' collective knowledge of operating Avatar 605 in circumstances including objects with various properties. '743 Application at [87:34-88:8]. In such embodiments, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Soldiers 605a in circumstances including objects with various properties. In tum, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Soldiers 605a. For example, multiple Users 50 (i.e. game players, etc.) may operate their Soldiers 605a in 3D Computer Game 18a running on their respective Computing Devices 70 where

	the Computing Devices 70 and/or elements thereof may be configured to transmit Soldiers' 605a operations in circumstances including objects with various properties to a remote ACAAO Unit 100. Such remote ACAAO Unit 100 enables learning of the game players' collective knowledge of operating Soldier 605a in circumstances including objects with various properties. '743 Application at [148:23-32].  FIG. 36 '743 Application at [Fig. 36 - "objects of first application": Opponent 615aa, Dog 615ab, and Pedestrian 615ac of Computer Game 18a]. ACAAO Unit 100 can obtain objects (i.e. Opponent 615aa, Dog 615ab, Pedestrian 615ac, etc.) and/or their properties in Soldier's 605a surrounding within 3D Computer Game 18a. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier's 605a surrounding. ACAAO Unit 100 can also obtain instruction Sets 526 used or executed in operating Soldier 605a. ACAAO Unit 100 can also optionally obtain any Extra 111fo 527 (i.e. time, location,

	computed, visual, acoustic, contextual, and/or other information, etc.) related to Soldier's 605a operation. As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier's 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier's 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a. Any Extra Info 527 related to Soldier's 605a operation may also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.) '743 Application at [147:32-148:5].  FIG. 37 '743 Application at [Fig. 37 - "objects of another application": Helicopter 615ba, Rocket Launcher 615bb, Communication Center 615bc, and Tank 615bd of Computer Game 18b]. Computing Device 70 may include or be coupled to ACAAO Unit 100. ACAAO Unit 100 can obtain objects

	(i.e. Helicopter 615ba, Rocket Launcher 615bb, Communication Center 615bc, Tank 615bd, etc.) and/or their properties in Tank's 605b surrounding within 2D Computer Game 18b. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Tank's 605b surrounding. ACAAO Unit 100 can also obtain instruction Sets 526 used or executed in operating Tank 605b. ACAAO Unit 100 can also optionally obtain any Extra Info 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.) related to Tank's 605b operation. As User 50 operates Tank 605b in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Tank's 605b operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Tank's 605b surrounding with one or more Instruction Sets 526 used or executed in operating Tank 605b. Any Extra Info 527 related to Tank's 605b operation may also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). '743 Application at [150:18-31].
and wherein the first correlation is connected with the third correlation by a connection;	The '743 Application supports "and wherein the first correlation is connected with the third correlation by a connection." For example, the '734 Application discloses: As such, machine learning, knowledge structuring or representation, decision making, pattern recognition, and/or other artificial intelligence functionalities may include a network of Nodes 852 (also referred to as neurons, etc.) and Connections 853 similar to that of a brain.

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’743 Application at [94:37-39].

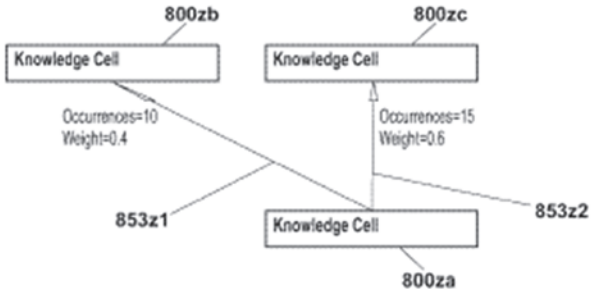


FIG. 17A

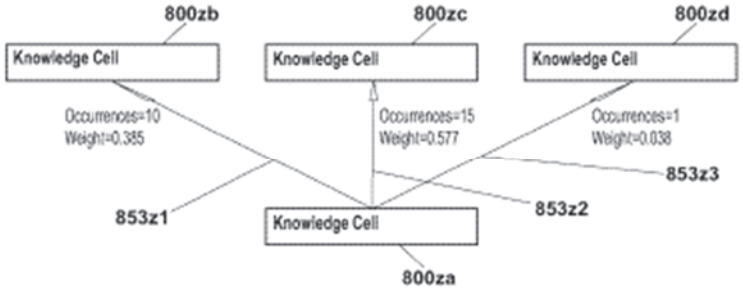


FIG. 17B

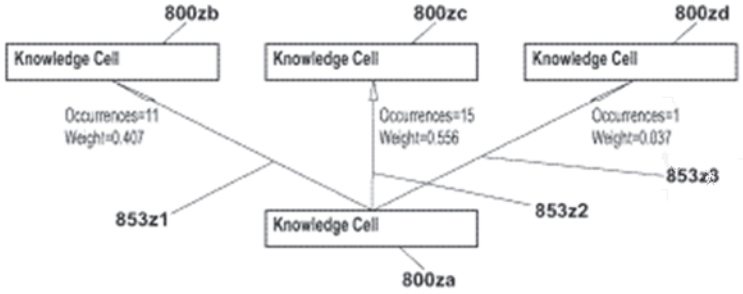


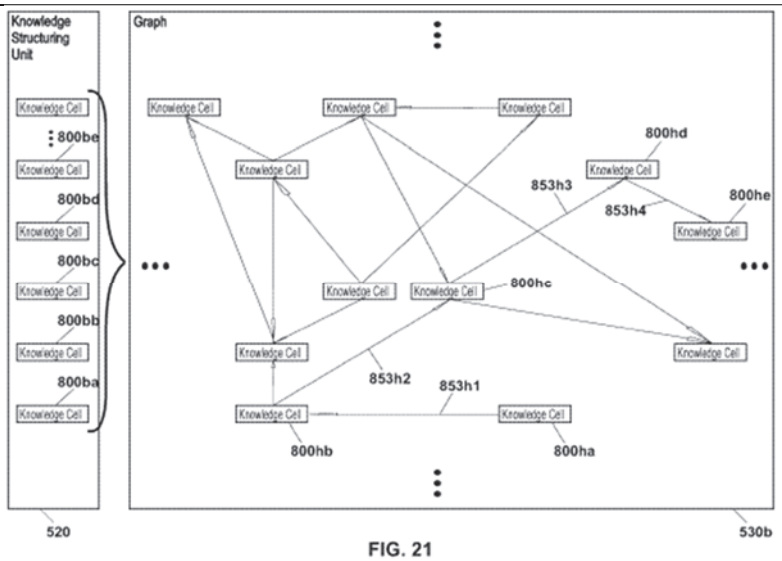
FIG. 17C

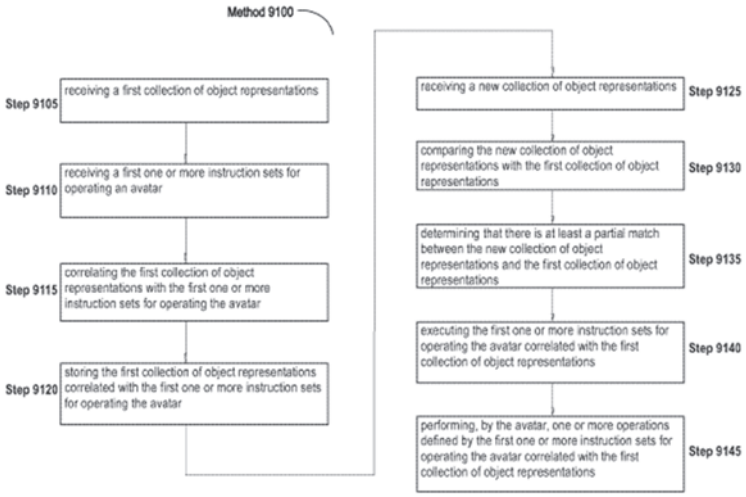
’743 Application at [Fig. 17A-17C].

As shown for example in Fig. 17 A Knowledge Cell 800za is connected to Knowledge Cell 800zb and Knowledge Cell 800zc by Connection 853z1 and Connection 853z2, respectively.

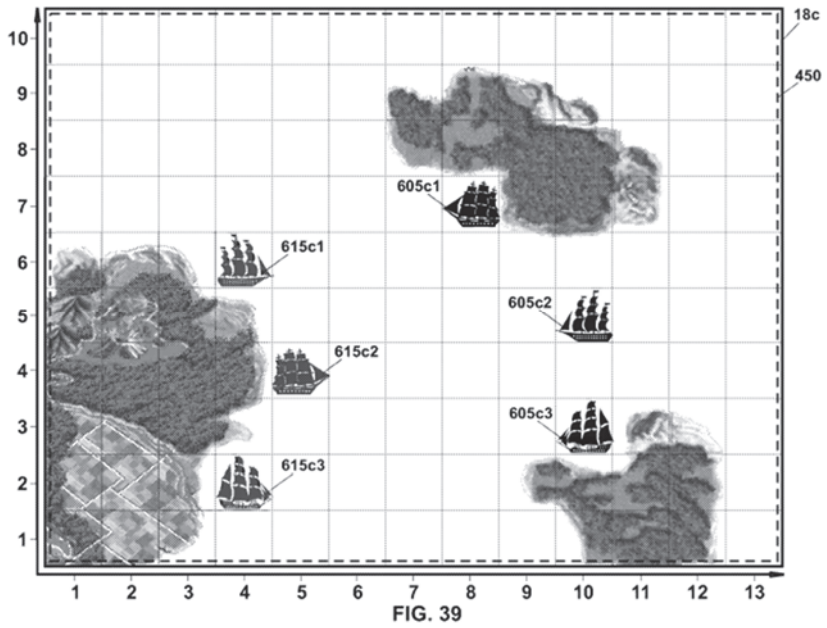
’743 Application at [97:5-6].

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	 FIG. 21 ’743 Application at [Fig. 21]. In further embodiments, the learning the first collection of object representations correlated with the first one or more instruction sets for operating the avatar of the application and the learning the second collection of object representations correlated with the second one or more instruction sets for operating the avatar of the application include creating a connection between the first collection of object representations correlated with the first one or more instruction sets for operating the avatar of the application and the second collection of object representations correlated with the second one or more instruction sets for operating the avatar of the application. ’743 Application at [14:21-27].
Support for Limitation(s) Unique to Substitute Claim 23 (which is based on Original Claim 5)	
wherein the second avatar of the application performs the one or more operations defined by the first one or more instruction sets for	The ’743 Application supports “wherein the second avatar of the application performs the one or more operations defined by the first one or more instruction sets for operating the first avatar of the application.” For example, the ’734 Application discloses: The artificial intelligence unit may be further configured

operating the first avatar of the application;	to: cause the processor circuit to execute the fast one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations, the causing performed in response to the anticipating of the artificial intelligence unit, wherein the avatar of the application performs one or more operations denned by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations. '743 Application at [1:37-2:3]. The method may further comprise: (g) performing, by the avatar of the application, one or more operations defined by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations. '743 Application at [16:27-29].  FIG. 30 '743 Application at [Fig. 30]. At step 9145, one or more operations defined by the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are performed by the avatar.

	’743 Application at [143:17-18]. Any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Avatars 605 in circumstances including objects with various properties. In turn, any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. A remote ACAAO Unit 100 can be offered as a network service (i.e. on line application, etc.). In some aspects; a remote ACAAO Unit 100 (i.e. global ACAAO Unit 100, etc.) may reside on the Internet and be available to all the world’s Computing Devices 70, Processors 11, Application Programs 18, and/or other elements configured to transmit operations of their Avatars 605 in circumstances including objects with various properties and/or configured to utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. For example, multiple players (i.e. Users 50, etc.) may operate their Avatars 605 in a computer game (i.e. Application Program 18, etc.) running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Avatar’s 605 operations in circumstances including objects with various properties to a remote ACAA.O Unit 100. Such remote ACAAO Unit 100 enables learning of the players’ collective knowledge of operating Avatar 605 in circumstances including objects with various properties. ’743 Application at [87:34-88:8]. In such embodiments, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100

	may learn operations of their Soldiers 605a in circumstances including objects with various properties. In tum, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Soldiers 605a. For example, multiple Users 50 (i.e. game players, etc.) may operate their Soldiers 605a in 3D Computer Game 18a running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Soldiers' 605a operations in circumstances including objects with various properties to a remote ACAAO Unit 100. Such remote ACAAO Unit 100 enables learning of the game players' collective knowledge of operating Soldier 605a in circumstances including objects with various properties. '743 Application at [148:23-32].  FIG. 39 '743 Application at [Fig. 39 - "first avatar of application": Ship 605c1; "second avatar of the application": Ship 605c2]. Referring to Fig. 39, in some exemplary embodiments,

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	Application Program 18 may be or include a 2D Computer Game 18c comprising multiple Avatars 605 that User 50 can control or operate. '743 Application at [152:1-2]. If substantially similar or at least a partial match is found or determined, ACAAO Unit 110 may cause the Instruction Sets 526 correlated with the previously learned Collections of Object Representations 525 to be executed, thereby enabling autonomous operation of Ships 605c1-605c3, etc. in similar circumstances as in previously learned ones. '743 Application at [152:32-35].
Support for Limitation(s) Unique to Substitute Claim 24 (which is based on Original Claim 7)	
wherein, to correlate the first one or more object representations with the first one or more instruction sets for operating the first avatar of the application, a determination is made that the first one or more instruction sets for operating the first avatar of the application temporally correspond to the first one or more object representations;	The '743 Application supports "wherein, to correlate the first one or more object representations with the first one or more instruction sets for operating the first avatar of the application, a determination is made that the first one or more instruction sets for operating the first avatar of the application temporally correspond to the first one or more object representations." For example, the '734 Application discloses: In some embodiments, Knowledge Structuring Unit 520 may correlate a Collection of Object Representations 525 with one or more temporally corresponding Instruction Sets 526 and/or Extra Info 527. This way, Knowledge Structuring Unit 520 can structure the knowledge of Avatar's 605 operation at or around the time of generating Collections of Object Representations 525. Such functionality enables spontaneous or seamless learning of Avatar's 605 operation in circumstances including objects with various properties as Avatar 605 is operated in real time. In some designs, Knowledge Structuring Unit 520 may receive a stream of Instruction Sets 526 used or executed to effect Avatar's 605 operations as well as a stream of Collections of Object

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	Representations 525 representing Objects 615 in Avatar's 605 surrounding as the operations are performed. Knowledge Structuring Unit 520 can then correlate Collections of Object Representations 525 from the stream of Collections of Object Representations 525 with temporally corresponding Instruction Sets 526 from the stream of Instruction Sets 526 and/or any Extra Info 527. Collections of Object Representations 525 without a temporally corresponding Instruction Set 526 may be uncorrelated, for instance. In some aspects, Instruction Sets 526 and/or Extra Info 527 that temporally correspond to a Collection of Object Representations 525 may include Instruction Sets 526 used and/or Extra Info 527 obtained at the time of generating the Collection of Object Representations 525. In other aspects, Instruction Sets 526 and/or Extra Info 527 that temporally correspond to a Collection of Object Representations 525 may include Instruction Sets 526 used and/or Extra Info 527 obtained within a certain time period before and/or after generating the Collection of Object Representations 525. For example, Instruction Sets 526 and/or Extra Info 527 that temporally correspond to a Collection of Object Representations 525 may include Instruction Sets 526 used and/or Extra Info 527 obtained within 50 milliseconds, 1 second, 3 seconds, 20 seconds, 1 minute, 41 minutes, 2 hours, or any other time period before and/or after generating the Collection of Object Representations 525. Such time periods can be defined by a user, by ACAAO system administrator, or automatically by the system based on experience, testing, inquiry, analysis, synthesis, or other techniques, knowledge, or input. In other aspects, Instruction Sets 526 and/or Extra Info 527 that temporally correspond to a Collection of Object Representations 525 may include Instruction Sets 526 used and/or Extra Info 527 obtained from the time of generating the Collection of Object Representations 525 to the time of generating a next Collection of Object Representations 525. In further aspects, instruction Sets 526 and/or Extra Info 527 that temporally correspond to a Collection of Object

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	Representations 525 may include Instruction Sets 526 used and/or Extra Info 527 obtained from the time of generating a previous Collection of Object Representations 525 to the time of generating the Collection of Object Representations 525. Any other temporal relationship or correspondence between Collections of Object Representations 525 and correlated Instruction Sets 526 and/or Extra Info 527 can be implemented. '743 Application at [91:14-92:4]. In some embodiments, the first one or more instruction sets for operating the avatar of the application include one or more instruction sets that temporally correspond to the first collection of object representations. The one or more instruction sets that temporally correspond to the first collection of object representations may include one or more instruction sets executed at a time of generating the first collection of object representations. The one or more instruction sets that temporally correspond to the first collection of object representations may include one or more instruction sets executed prior to generating the first collection of object representations. The one or more instruction sets that temporally correspond to the first collection of object representations may include one or more instruction sets executed within a threshold period of time prior to generating the first collection of object representations. The one or more instruction sets that temporally correspond to the first collection of object representations may include one or more instruction sets executed subsequent to generating the first collection of object representations. The one or more instruction sets that temporally correspond to the first collection of object representations may include one or more instruction sets executed within a threshold period of time subsequent to generating the first collection of object representations. The one or more instruction sets that temporally correspond to the first collection of object representations may include one or

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	more instruction sets executed within a threshold period of time prior to generating the first collection of object representations and a threshold period of time subsequent to generating the first collection of object representations. '743 Application at [4:1-16]. One or more instruction sets may temporally correspond to a collection of object representations. '743 Application at [138:24-25].
Support for Limitation(s) Unique to Substitute Claim 25 (which is based on Original Claim 9)	
wherein the first correlation is included in a first knowledge cell, and wherein the first knowledge cell is a data structure for storing, structuring, or organizing the first correlation;	The '743 Application supports "wherein the first correlation is included in a first knowledge cell, and wherein the first knowledge cell is a data structure for storing, structuring, or organizing the first correlation." For example, the '734 Application discloses:

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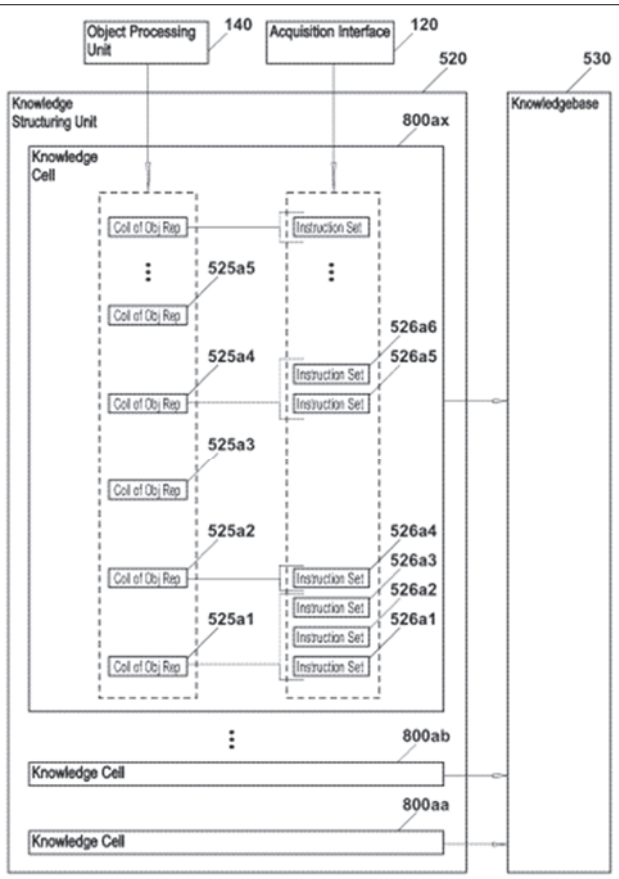


FIG. 12

’743 Application at [Fig. 12].

Knowledge Structuring Unit 520 comprises the functionality for creating or 20 generating Knowledge Cell 800 and storing one or more Collections of Object Representations 525 correlated with any Instruction Sets 526 and/or Extra Info 527 into the Knowledge Cell 800. As such, Knowledge Cell 800 comprises the functionality for storing one or more Collections of Object Representations 525 correlated with any Instruction Sets 526 and/or Extra Info 527.

’743 Application at [90:19-23].

For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info

	527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].

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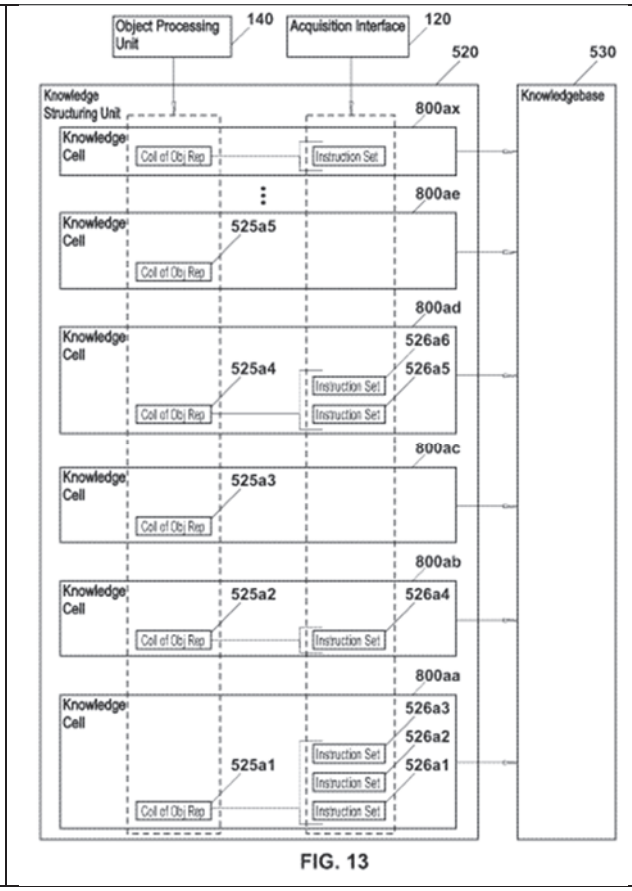


FIG. 13

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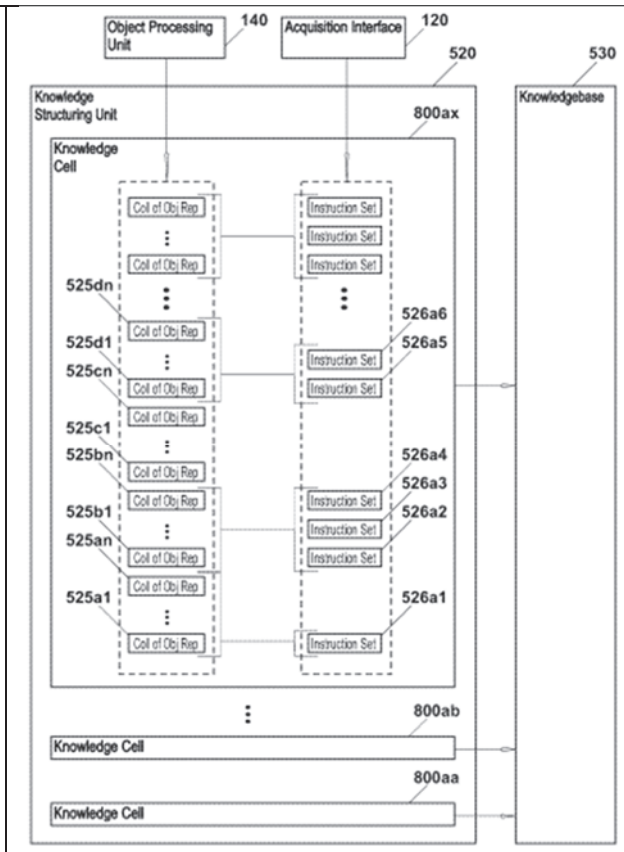


FIG. 14

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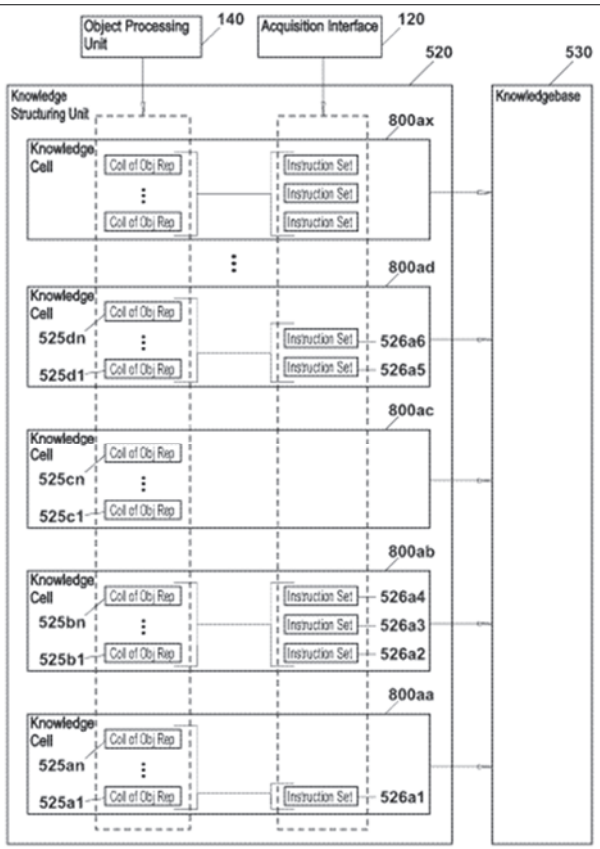


FIG. 15

’743 Application at [Figs. 13-15].

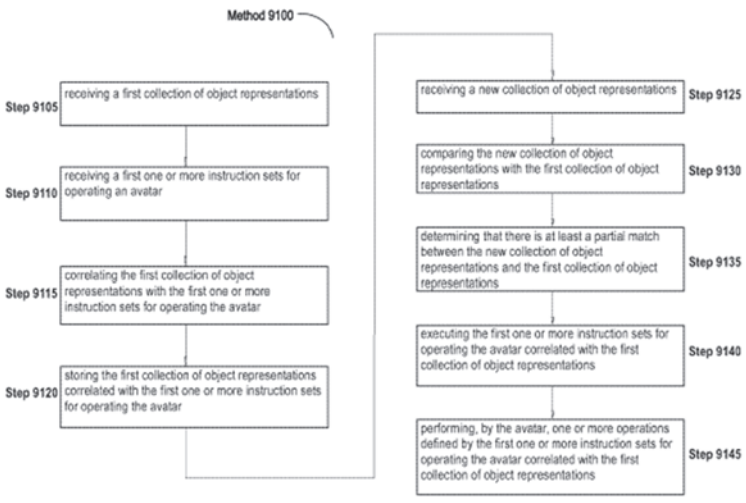
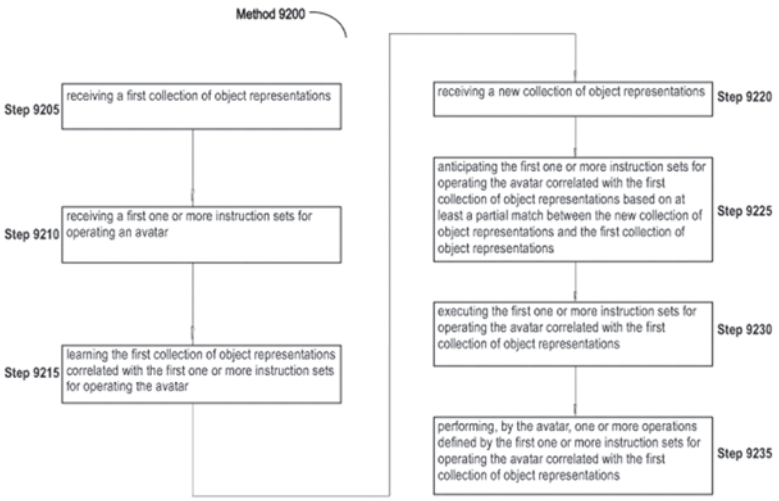
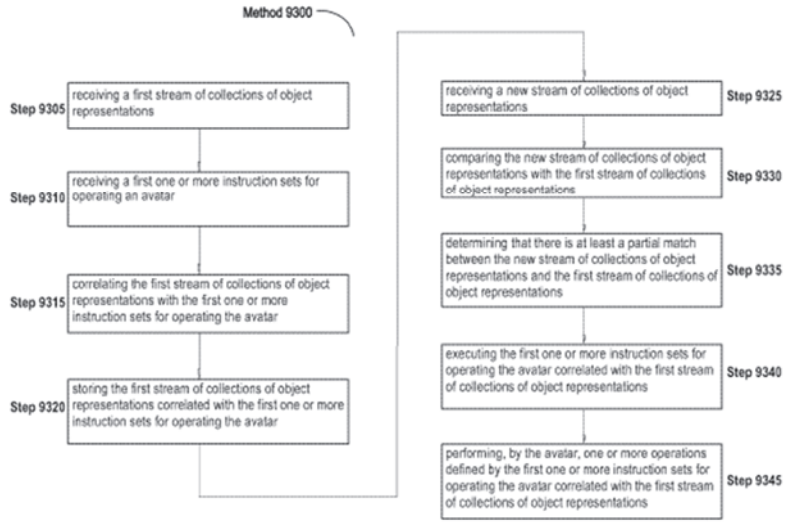


FIG. 30

’743 Application at [Fig. 30].

	Correlating may include structuring or generating a knowledge cell (i.e. Knowledge Cell 800, etc.) and storing one or more collections of object representations correlated with any instruction sets into the knowledge cell. ’743 Application at [138:37-39].  FIG. 31  FIG. 32

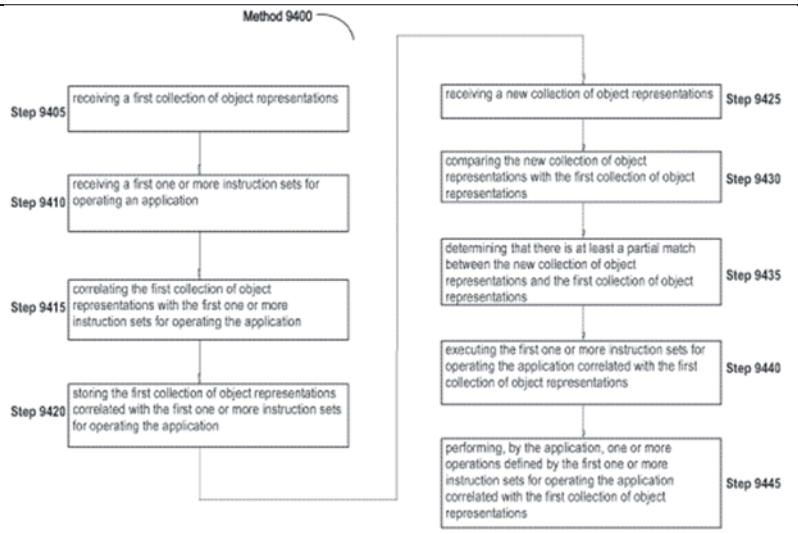


FIG. 33

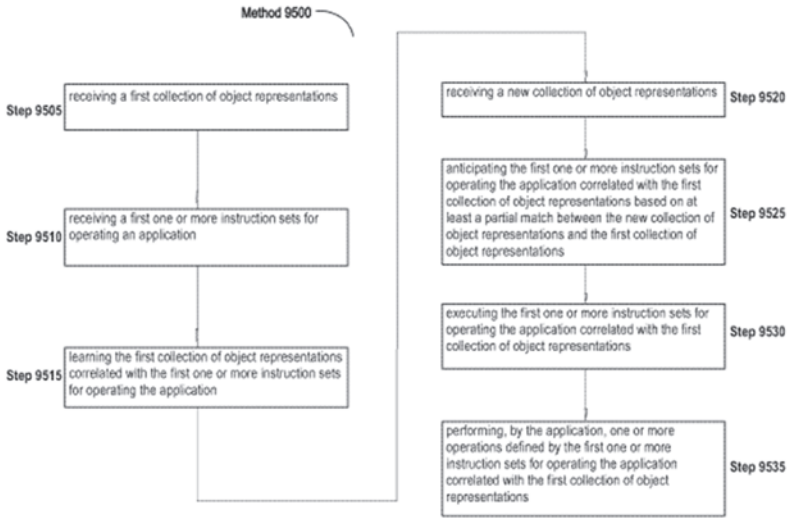


FIG. 34

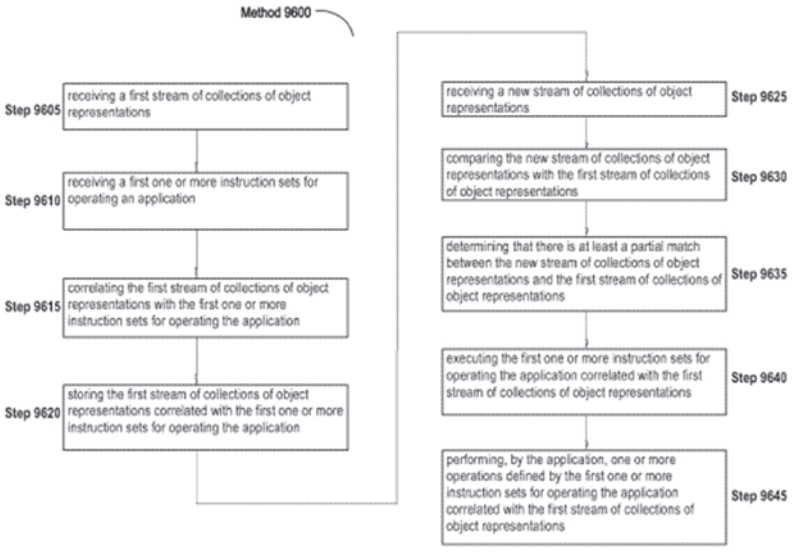
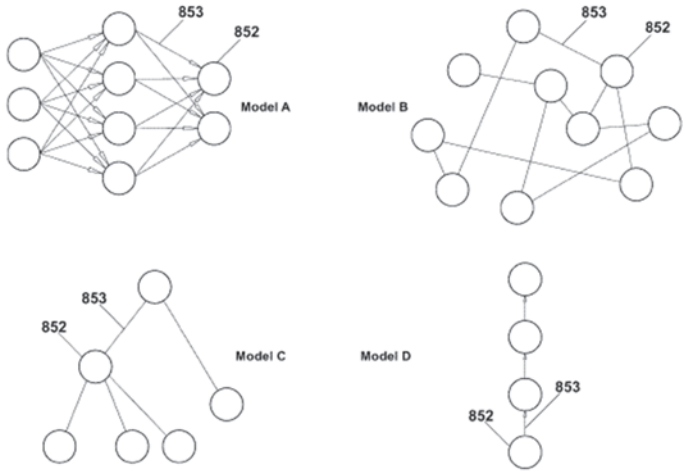


FIG. 35

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	’743 Application at [Figs. 31-35].  FIG. 16 ’743 Application at [Fig. 16].
Support for Limitation(s) Unique to Substitute Claim 26 (which is based on Original Claim 11)	
wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating the first avatar of the application,	The ’743 Application supports “wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating the first avatar of the application.” For example, the ’734 Application discloses:

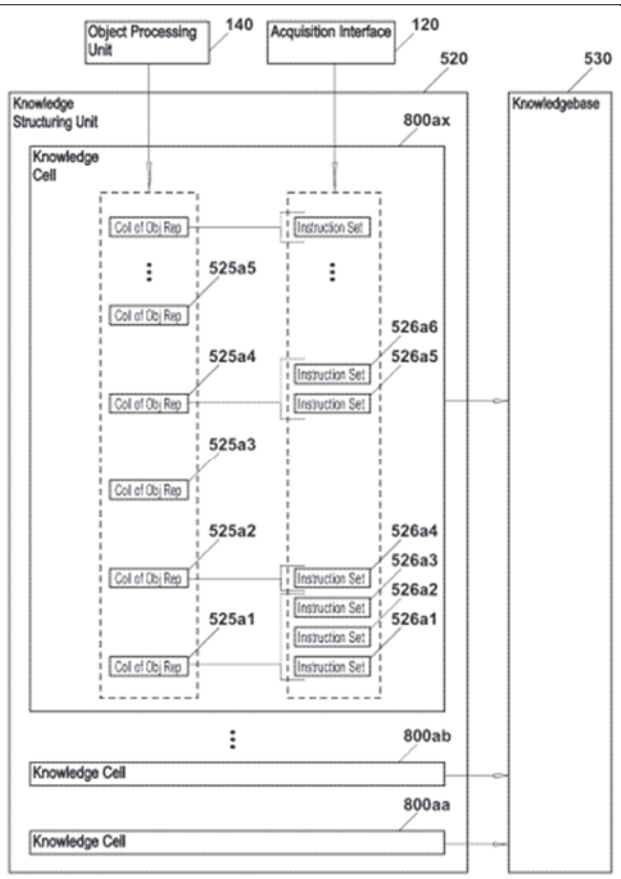
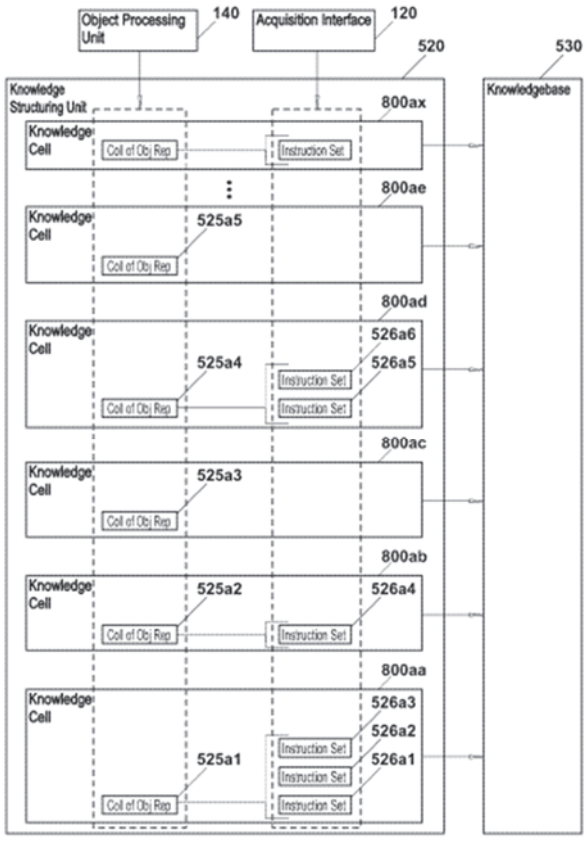


FIG. 12

’743 Application at [Fig. 12].

For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown).

	Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].  FIG. 13

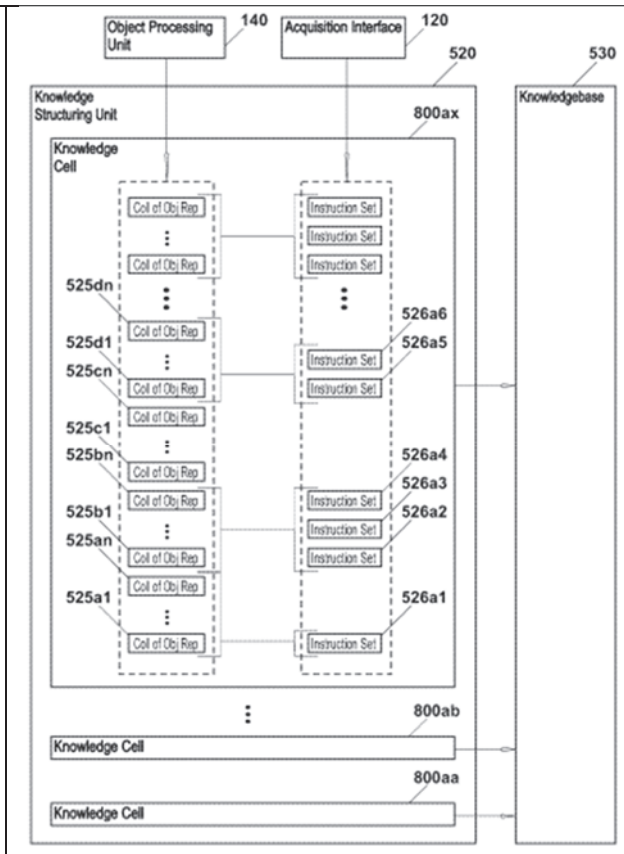


FIG. 14

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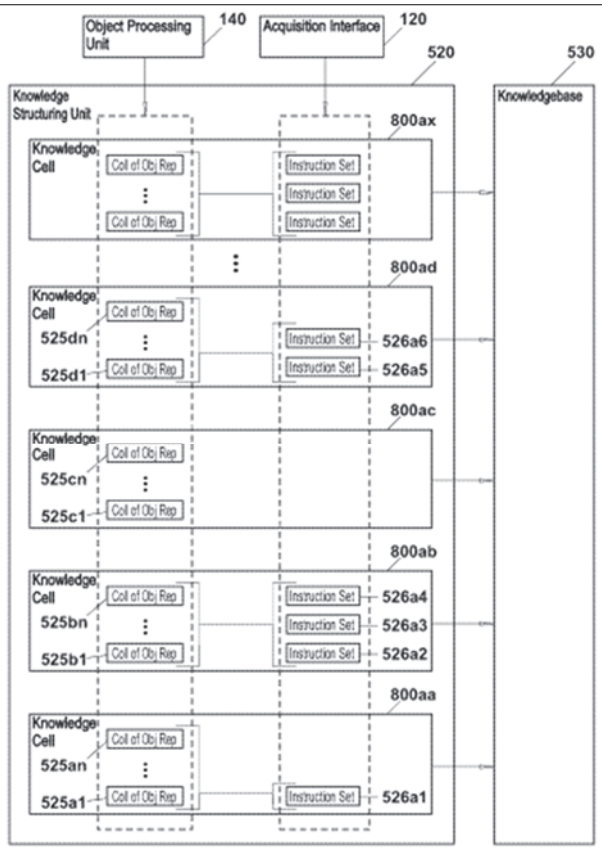
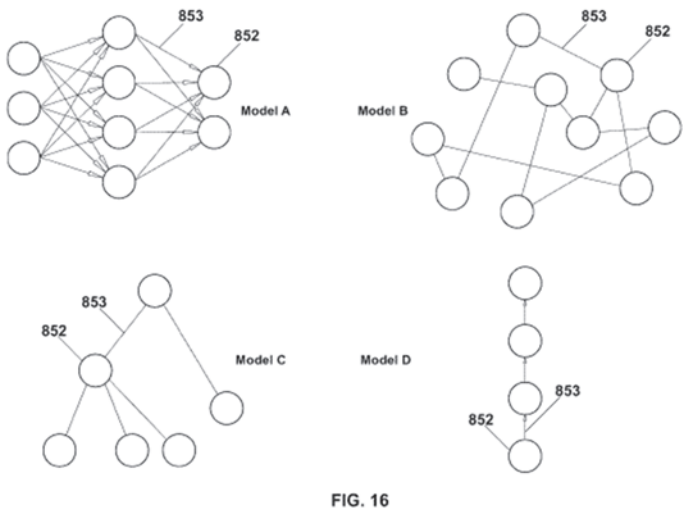


FIG. 15

’743 Application at [Figs. 13-15].

A collection of object representations correlated with one or more instruction sets may be part of a stored plurality of collections of object representations correlated with one or more instruction sets.

’743 Application at [139:13-15].

	 FIG. 16 ’743 Application at [Fig. 16].
and wherein the third one or more object representations represent one or more objects of the application,	The ’743 Application supports “and wherein the third one or more object representations represent one or more objects of the application.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar’s 605 surrounding within Application Program 18. ’743 Application at [62:14-22].

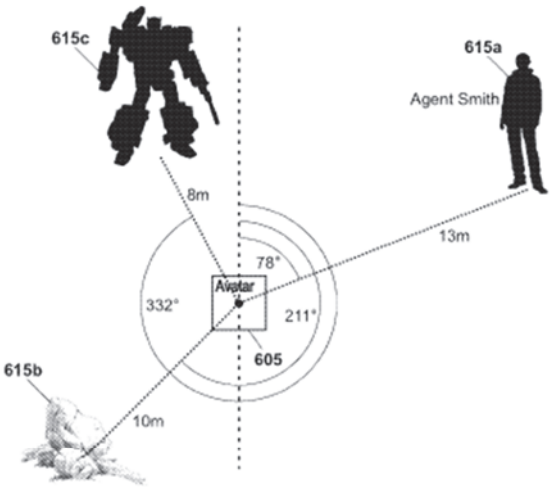


FIG. 5A

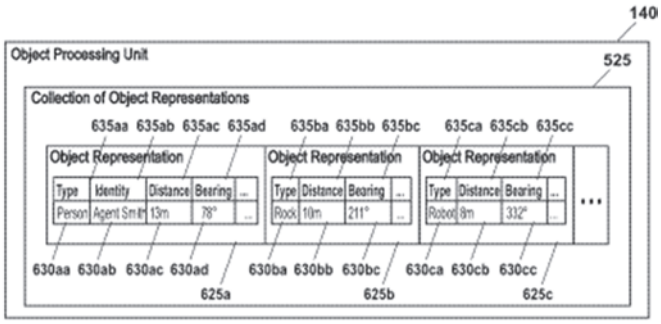


FIG. 5B

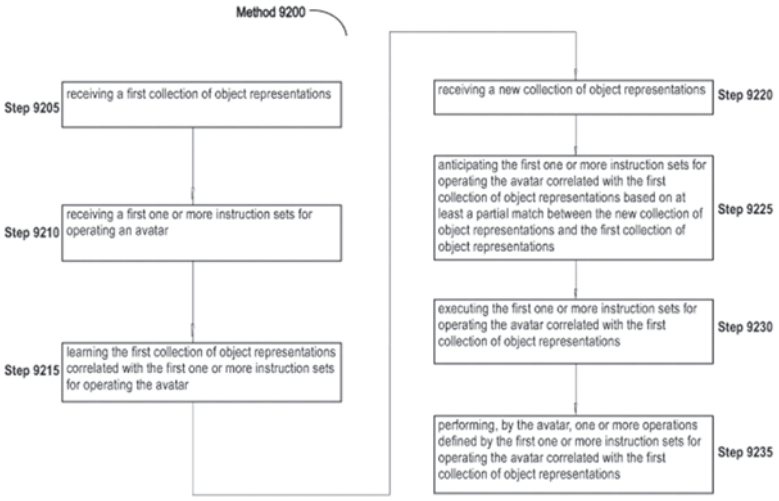
’743 Application at [Figs. 5A-5B].

As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc.

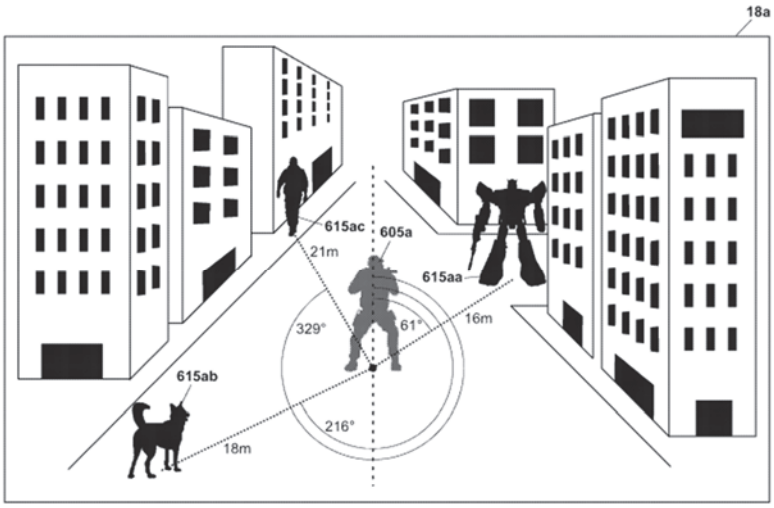
’743 Application at [73:27-29].

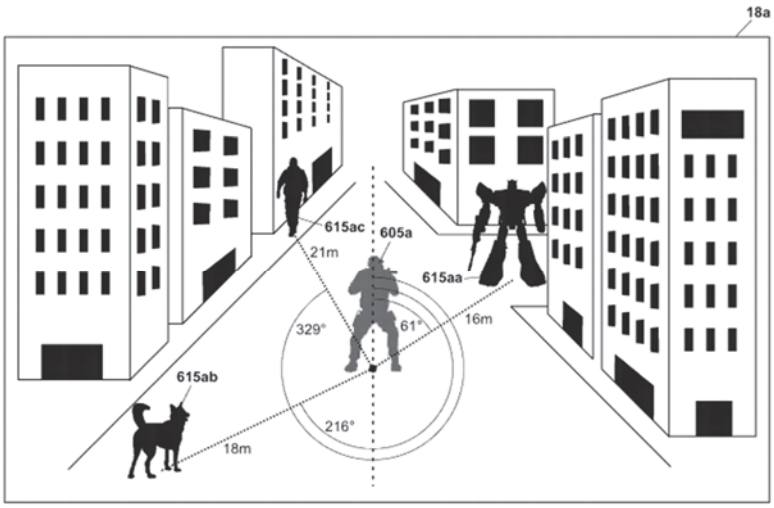
At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or

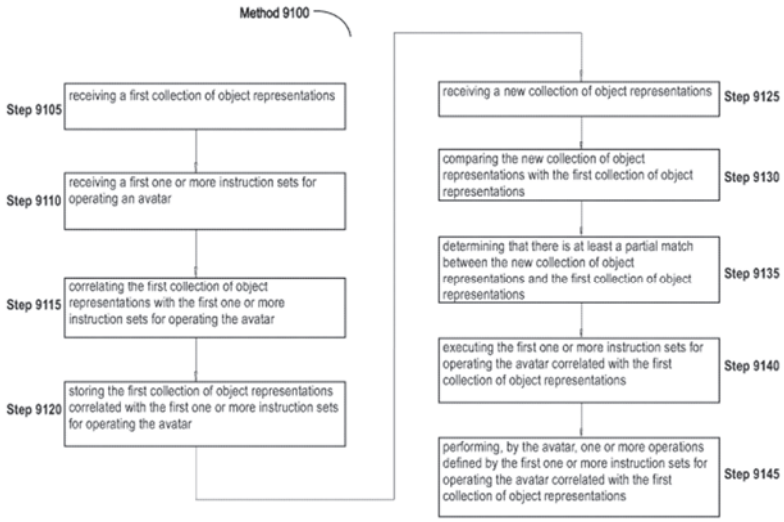
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	information. In some designs, an object representation includes a representation of an object (i.e. Object 615, etc.) in an avatar's (i.e. Avatar's 605, etc.) surrounding within an application (i.e. Application Program 18, etc.). In other designs, an object representation includes a representation of an object of an application. '743 Application at [135:29-34]. The artificial intelligence unit may be configured to: receive a first collection of object representations, the first collection of object representations including one or more object representations representing one or more objects of the application. '743 Application at [1:27-29].
and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user,	The '743 Application supports "and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user." For example, the '734 Application discloses:  FIG. 31 '743 Application at [Fig. 31]. Referring to Fig. 31, the illustration shows an embodiment of a method 9200 for learning and/or using

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	an avatar's circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar's operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances. '743 Application at [143:28-31]. At step 9215, the first collection of object representations correlated with the first one or more instruction sets for operating the avatar are learned. '743 Application at [144:1-2].  FIG. 36 '743 Application at [Fig. 36]. As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier's 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier's 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a. '743 Application at [147:38-148:2].

and wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by the user,	The ’743 Application supports “and wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by the user.” For example, the ’734 Application discloses: In some embodiments, the artificial intelligence unit is further configured to: receive a second collection of object representations, the second collection of object representations including one or more object representations representing one or more objects of the application; receive a second one or more instruction sets for operating an avatar of the application; and learn the second collection of object representations correlated with the second one or more instruction sets for operating the avatar of the application. ’743 Application at [14:12-16].  FIG. 36 ’743 Application at [Fig. 36]. As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier’s 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in

	Soldier's 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a. '743 Application at [147:38-148:2].  FIG. 30 '743 Application at [Fig. 30 - "learning process"]. Referring to Fig. 30, the illustration shows an embodiment of a method 9100 for learning and/or using an avatar's circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar's operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances. '743 Application at [135:22-25].

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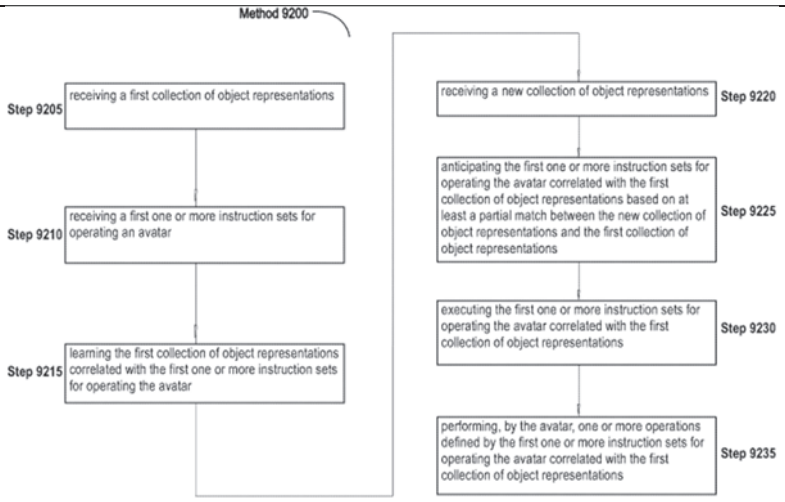
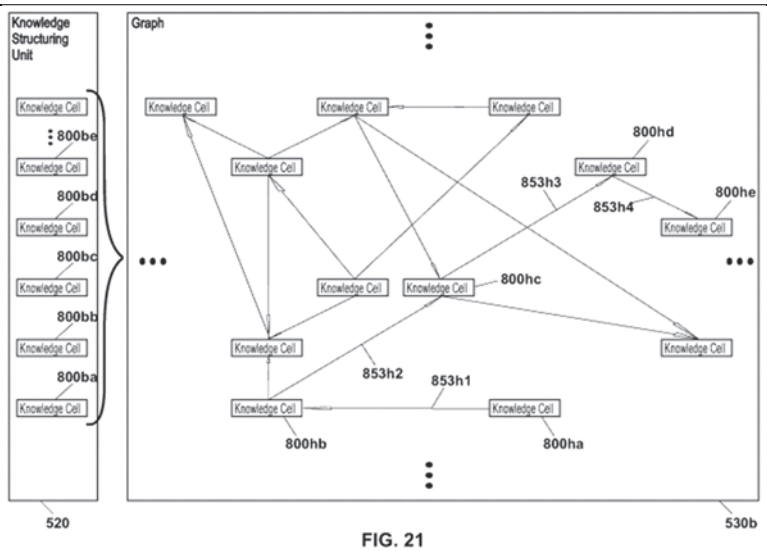
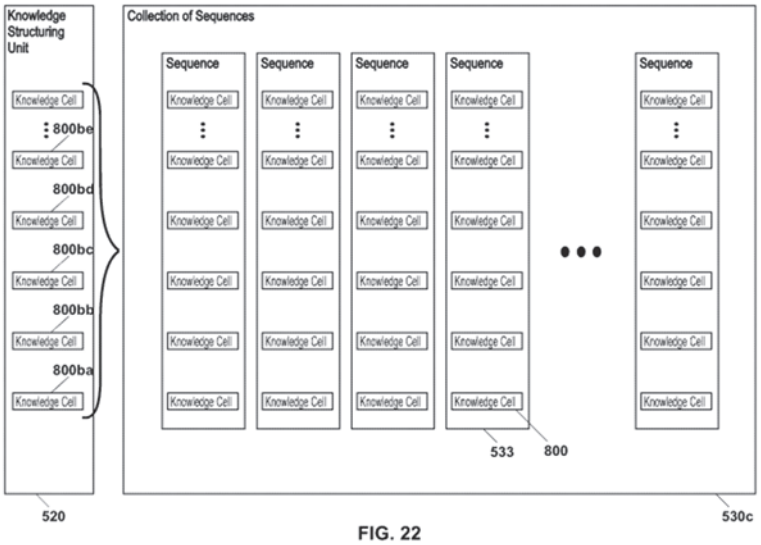


FIG. 31

’743 Application at [Fig. 31 - “another learning process”].

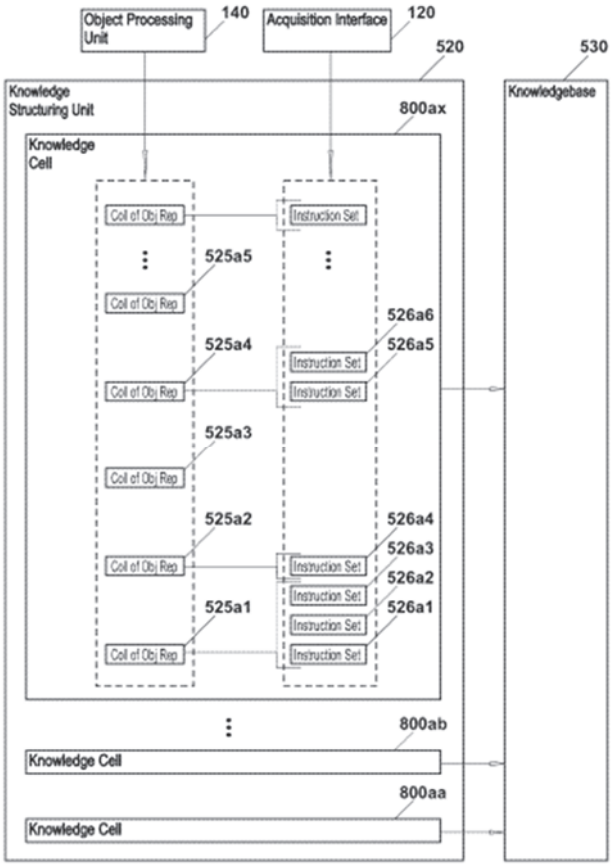
Referring to Fig. 31, the illustration shows an embodiment of a method 9200 for learning and/or using an avatar’s circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar’s operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances.

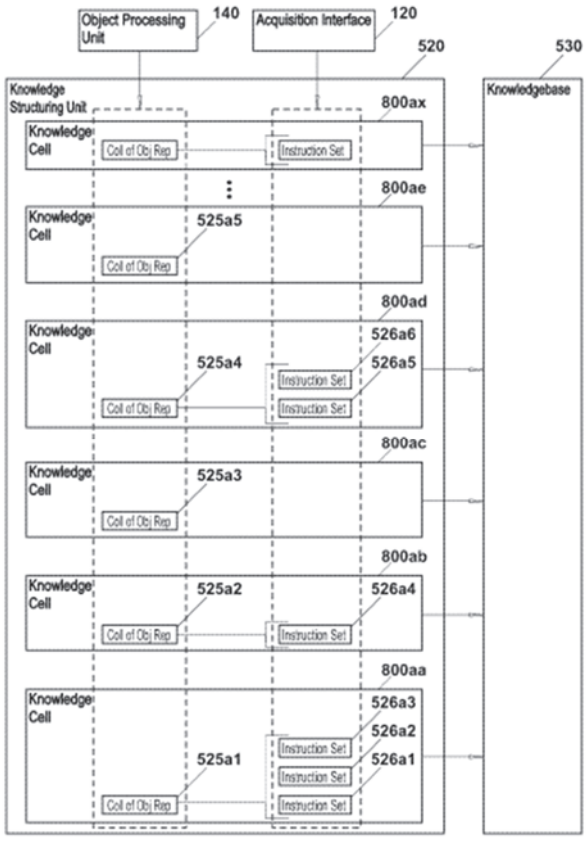
’743 Application at [143:28-31].

	 FIG. 21 ’743 Application at [Fig. 21 - “learning process”].  FIG. 22 ’743 Application at [Fig. 22 - “another learning process”].
and wherein the user is: a human user, or a non-human user;	The ’743 Application supports “and wherein the user is: a human user, or a non-human user.” For example, the ’734 Application discloses: User 50 (also referred to simply as user or other suitable name or reference) comprises a human user or non-human user. A non-human User 50 includes any device, system, program, and/or other mechanism for operating

	or controlling Application Program 18, Avatar 605, Computing Device 70, and/or elements thereof. For example, User 50 may issue an operating direction to Application Program 18 responsive to which Application Program's 18 instructions or instruction sets may be executed by Processor 11 to perform a desired operation with/on Avatar 605. User's 50 operating directions comprise any user inputted data (i.e. values, text, symbols, etc.), directions (i.e. move right, move up, move forward, copy an item, click on a link, etc.), instructions or instruction sets (i.e. manually inputted instructions or instruction sets, etc.), and/or other inputs or information. A non-human User 50 can utilize more suitable interfaces instead of, or in addition to, Human-machine Interface 23 and/or Display 21 for controlling Application Program 18, Avatar 605, Computing Device 70, and/or elements thereof. Examples of such interfaces include an application programming interface (API), bridge (i.e. bridge between applications, devices, or systems, etc.), driver, socket, direct or operative connection, handle, function/routine/subroutine, and/or other interfaces. '743 Application at [61:23-35].
Support for Limitation(s) Unique to Substitute Claim 27 (which is based on Original Claim 12)	
wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for	The '743 Application supports "wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating the first avatar of the application." For example, the '734 Application discloses:

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operating the first avatar of the application,	 FIG. 12 ’743 Application at [Fig. 12]. For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown).

	Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].  FIG. 13

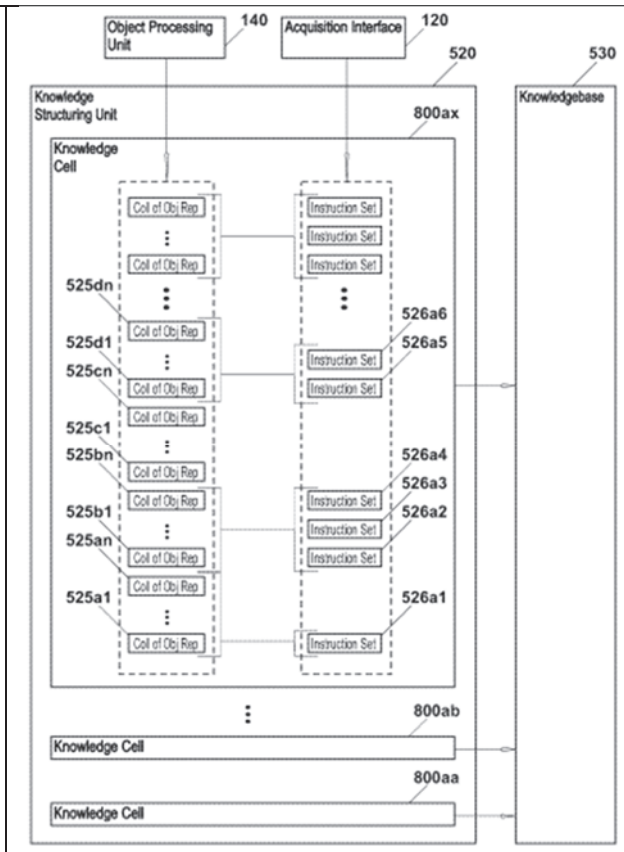


FIG. 14

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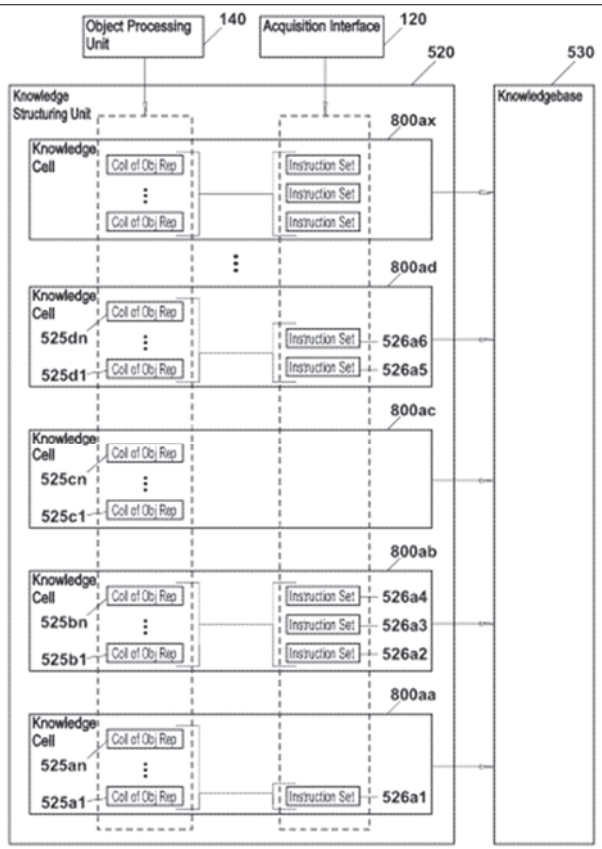


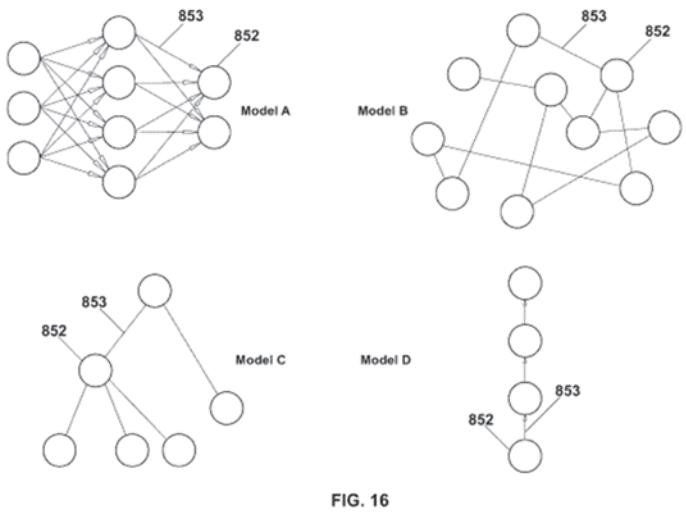
FIG. 15

’743 Application at [Figs. 13-15].

A collection of object representations correlated with one or more instruction sets may be part of a stored plurality of collections of object representations correlated with one or more instruction sets.

’743 Application at [139:13-15].

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	 FIG. 16 ’743 Application at [Fig. 16].
and wherein the third one or more object representations represent one or more objects of the application,	The ’743 Application supports “and wherein the third one or more object representations represent one or more objects of the application.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar’s 605 surrounding within Application Program 18. ’743 Application at [62:14-22].

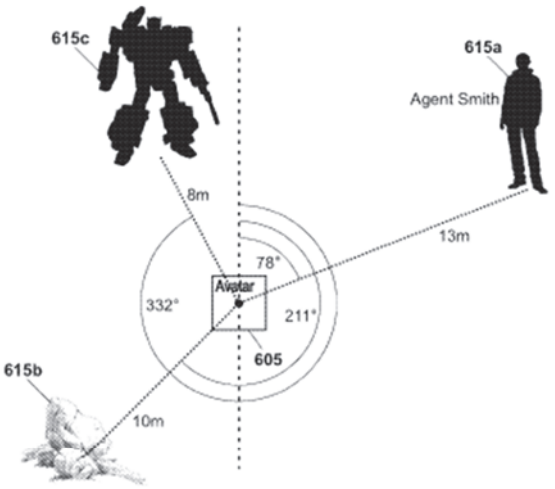


FIG. 5A

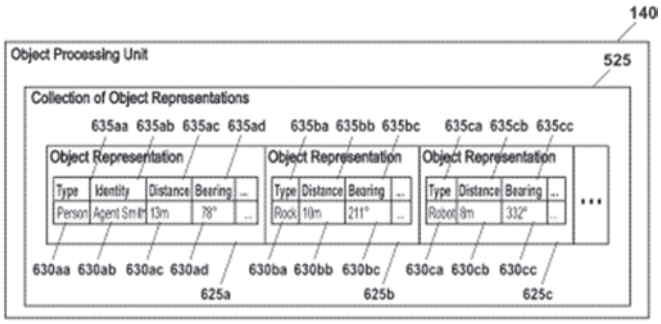


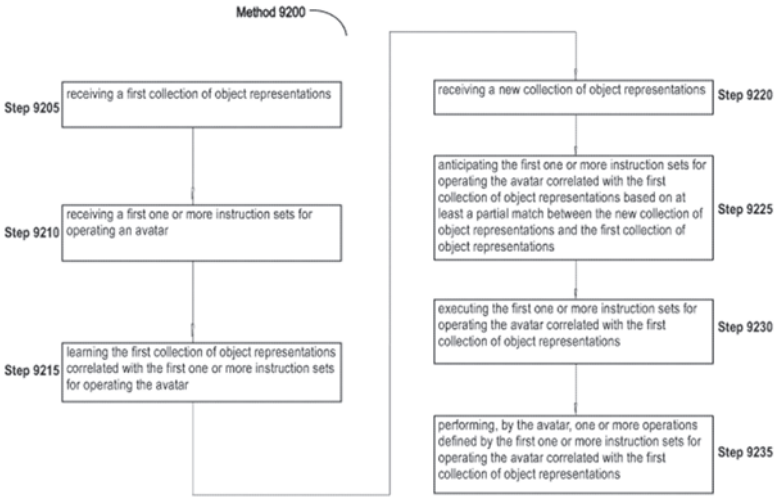
FIG. 5B

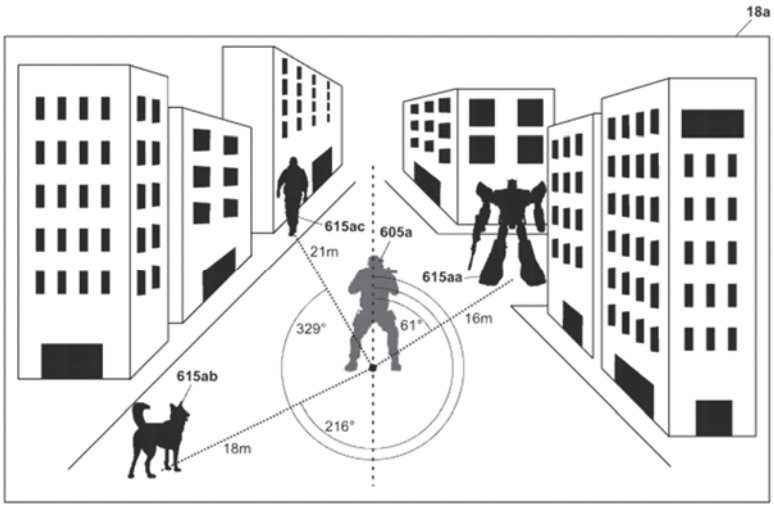
’743 Application at [Figs. 5A-5B].

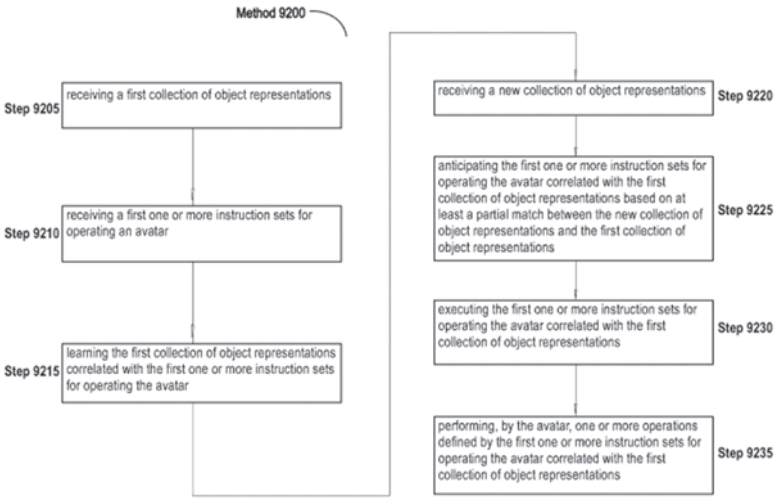
As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc.

’743 Application at [73:27-29].

At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or

	information. In some designs, an object representation includes a representation of an object (i.e. Object 615, etc.) in an avatar's (i.e. Avatar's 605, etc.) surrounding within an application (i.e. Application Program 18, etc.). In other designs, an object representation includes a representation of an object of an application. '743 Application at [135:29-34]. The artificial intelligence unit may be configured to: receive a first collection of object representations, the first collection of object representations including one or more object representations representing one or more objects of the application. '743 Application at [1:27-29].
and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user,	The '743 Application supports "and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user." For example, the '734 Application discloses:  FIG. 31 '743 Application at [Fig. 31]. Referring to Fig. 31, the illustration shows an embodiment of a method 9200 for learning and/or using

	an avatar's circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar's operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances. '743 Application at [143:28-31]. At step 9215, the first collection of object representations correlated with the first one or more instruction sets for operating the avatar are learned. '743 Application at [144:1-2].  FIG. 36 '743 Application at [Fig. 36]. As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier's 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier's 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a. '743 Application at [147:38-148:2].

and wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by another user, and wherein the user is: a human user, or a non-human user,	The ’743 Application supports “and wherein at least a portion of the third correlation is learned in another learning process that includes operating the first avatar of the application at least partially by another user.” For example, the ’734 Application discloses:  FIG. 31 ’743 Application at [Fig. 31]. At step 9215, the first collection of object representations correlated with the first one or more instruction sets for operating the avatar are learned. ’743 Application at [144:1-2].

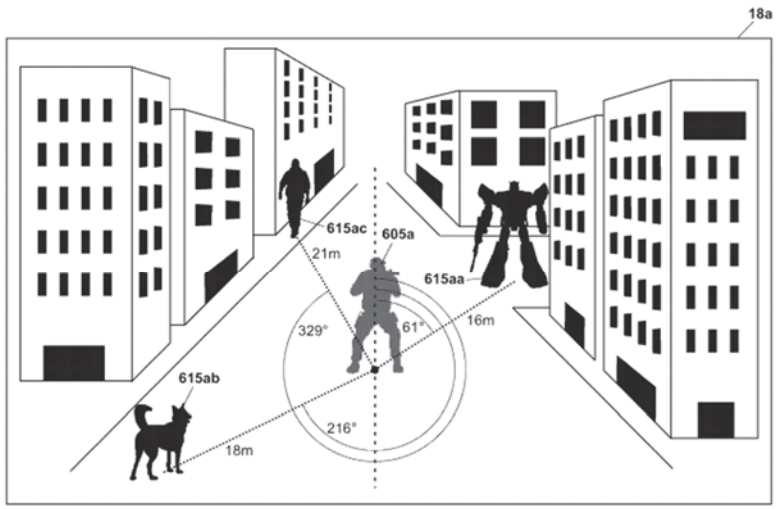


FIG. 36

’743 Application at [Fig. 36].

As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier’s 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier’s 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a.

’743 Application at [147:38-148:2].

In some embodiments, the artificial intelligence unit is further configured to: receive a second collection of object representations, the second collection of object representations including one or more object representations representing one or more objects of the application; receive a second one or more instruction sets for operating an avatar of the application; and learn the second collection of object representations correlated with the second one or more instruction sets for operating the avatar of the application.

’743 Application at [14:12-16].

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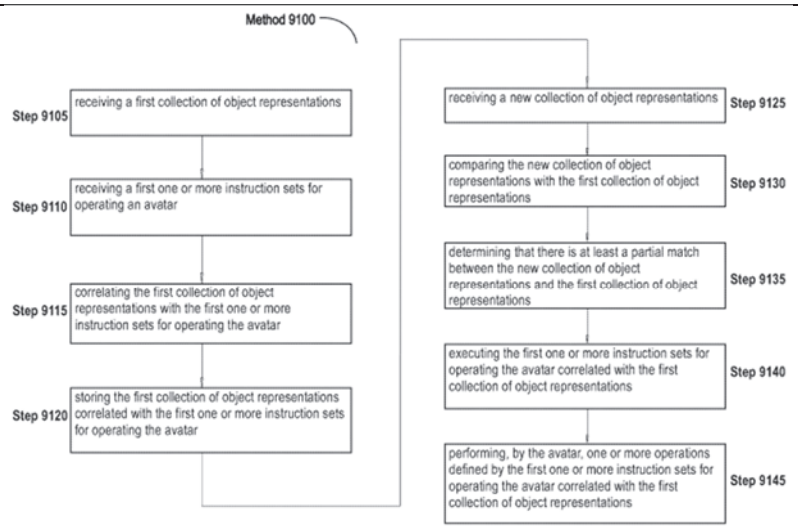


FIG. 30

’743 Application at [Fig. 30 - “learning process”].

Referring to Fig. 30, the illustration shows an embodiment of a method 9100 for learning and/or using an avatar’s circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar’s operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances.

’743 Application at [135:22-25].

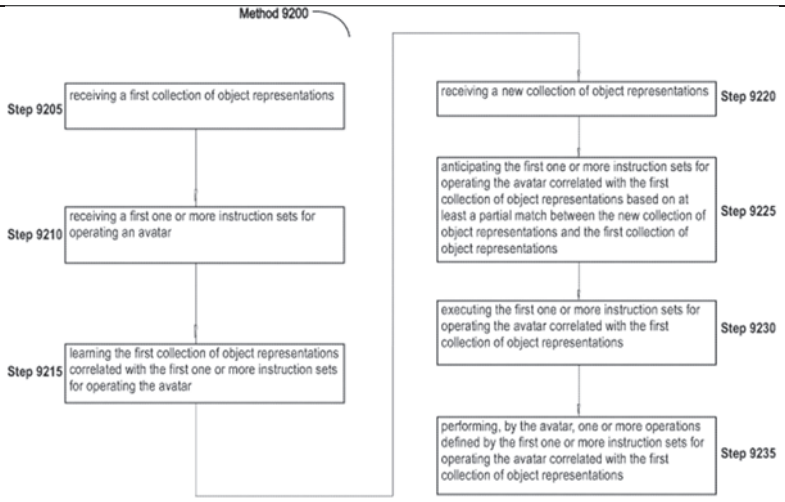


FIG. 31

’743 Application at [Fig. 31 - “another learning process”].

Referring to Fig. 31, the illustration shows an embodiment of a method 9200 for learning and/or using an avatar’s circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar’s operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances.

’743 Application at [143:28-31].

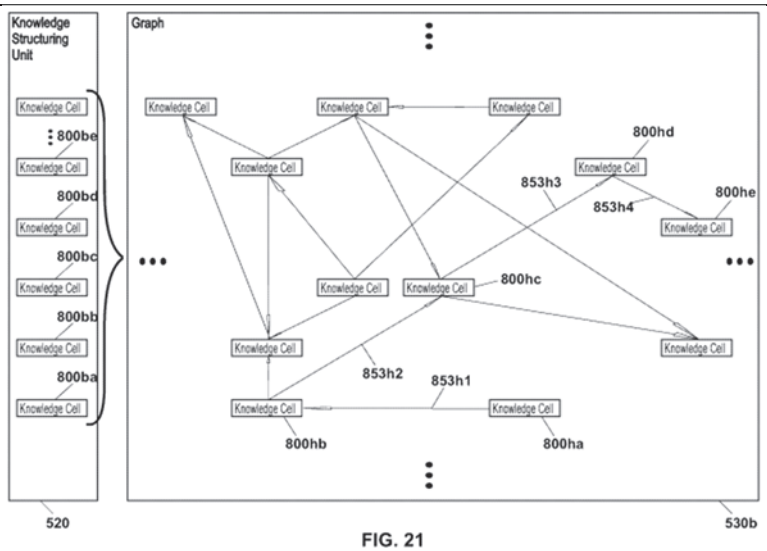


FIG. 21

'743 Application at [Fig. 21 - "learning process"].

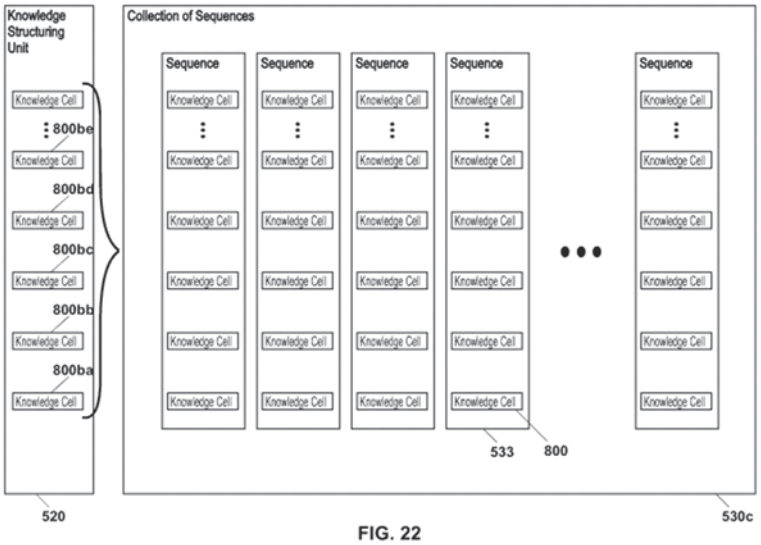


FIG. 22

'743 Application at [Fig. 22 - "another learning process"].

For example, multiple players (i.e. Users 50, etc.) may operate their Avatars 605 in a computer game (i.e. Application Program 18, etc.) running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Avatar's 605 operations in circumstances including objects with various properties to a remote ACAA.O

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	Unit 100. Such remote ACAAO Unit 100 enables learning of the players' collective knowledge of operating Avatar 605 in circumstances including objects with various properties. '743 Application at [88:4-8]. For example, multiple Users 50 (i.e. game players, etc.) may operate their Soldiers 605a in 3D Computer Game 18a running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Soldiers' 605a 30 operations in circumstances including objects with various properties to a remote ACAAO Unit 100. Such remote ACAAO Unit 100 enables learning of the game players' collective knowledge of operating Soldier 605a in circumstances including objects with various properties. '743 Application at [148:27-32].
and wherein the another user is: a human user, or a non-human user;	The '743 Application supports "and wherein the user is: a human user, or a non-human user, and wherein the another user is: a human user, or a non-human user." For example, the '734 Application discloses: User 50 (also referred to simply as user or other suitable name or reference) comprises a human user or non-human user. A non-human User 50 includes any device, system, program, and/or other mechanism for operating or controlling Application Program 18, Avatar 605, Computing Device 70, and/or elements thereof. For example, User 50 may issue an operating direction to Application Program 18 responsive to which Application Program's 18 instructions or instruction sets may be executed by Processor 11 to perform a desired operation with/on Avatar 605. User's 50 operating directions comprise any user inputted data (i.e. values, text, symbols, etc.), directions (i.e. move right, move up, move forward, copy an item, click on a link, etc.), instructions or instruction sets (i.e. manually inputted

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	instructions or instruction sets, etc.), and/or other inputs or information. A non-human User 50 can utilize more suitable interfaces instead of, or in addition to, Human-machine Interface 23 and/or Display 21 for controlling Application Program 18, Avatar 605, Computing Device 70, and/or elements thereof. Examples of such interfaces include an application programming interface (API), bridge (i.e. bridge between applications, devices, or systems, etc.), driver, socket, direct or operative connection, handle, function/routine/subroutine, and/or other interfaces. '743 Application at [61:23-35].
Support for Limitation(s) Unique to Substitute Claim 28 (which is based on Original Claim 13)	
wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating a third avatar of the application,	The '743 Application supports "wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating a third avatar of the application." For example, the '734 Application discloses:

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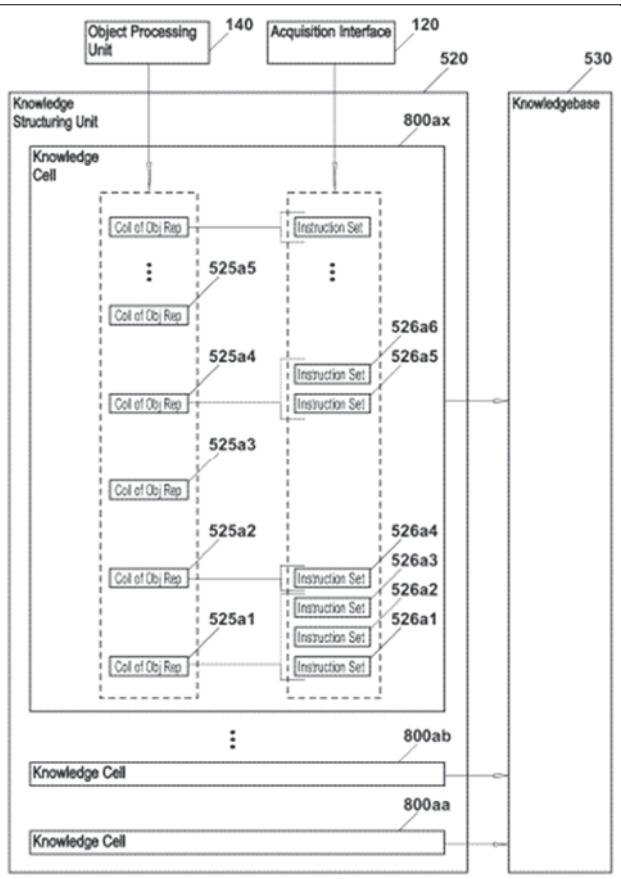
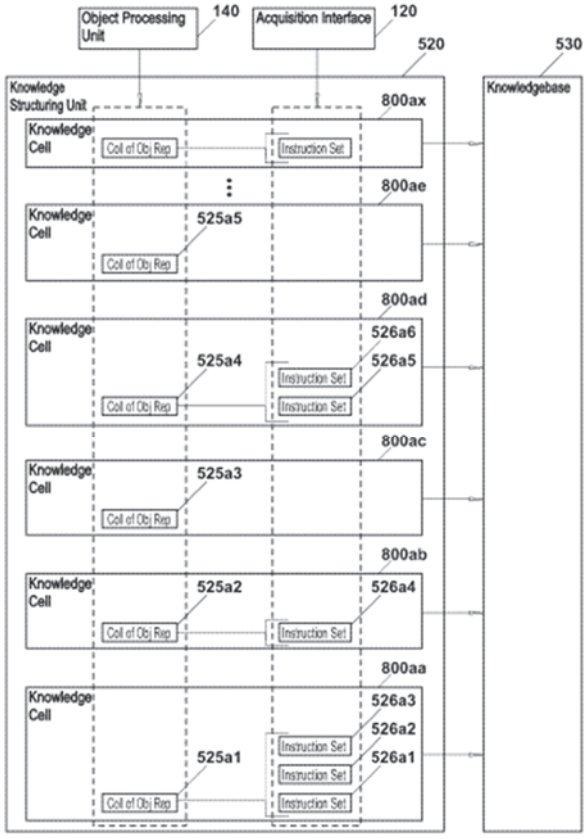


FIG. 12

’743 Application at [Fig. 12].

For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown).

	Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].  FIG. 13

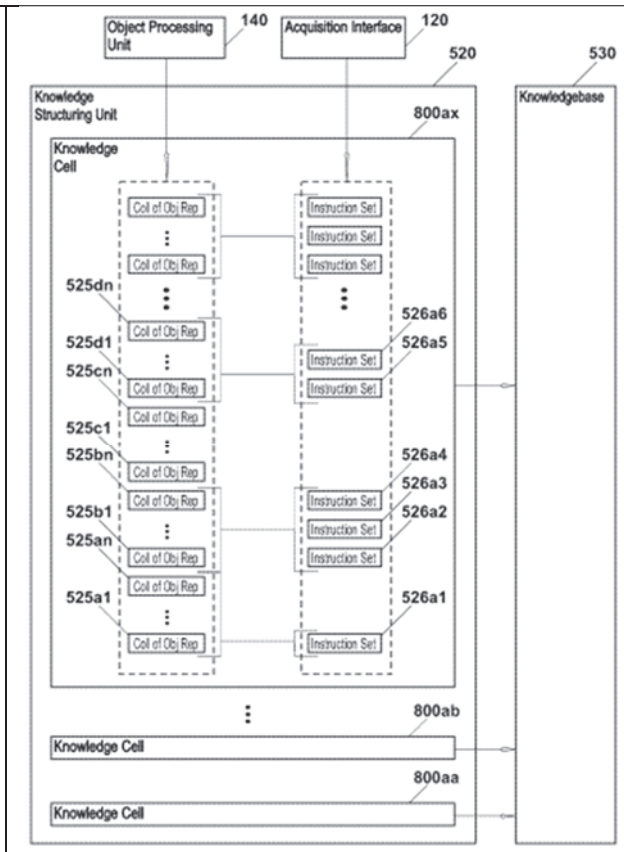


FIG. 14

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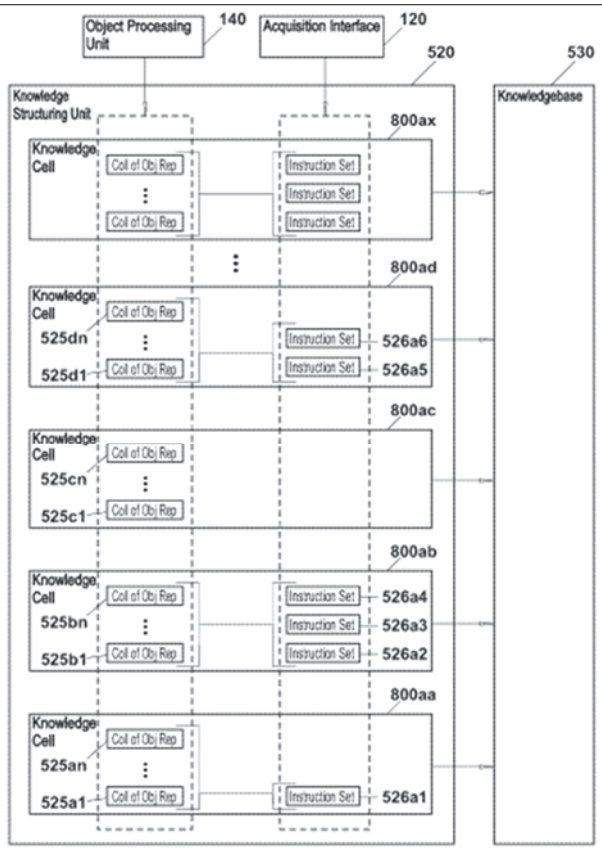


FIG. 15

’743 Application at [Figs. 13-15].

A collection of object representations correlated with one or more instruction sets may be part of a stored plurality of collections of object representations correlated with one or more instruction sets.

’743 Application at [139:13-15].

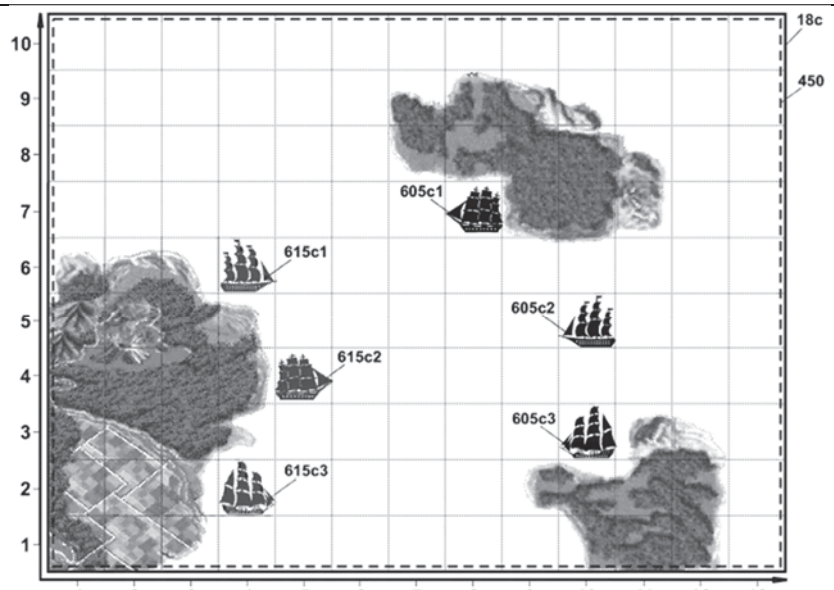


FIG. 39

’743 Application at [Fig. 39 - “first avatar of application”: Ship 605c1; “third avatar of the application”: Ship 605c2].

Referring to Fig. 39, in some exemplary embodiments, Application Program 18 may be or include a 2D Computer Game 18c comprising multiple Avatars 605 that User 50 can control or operate.

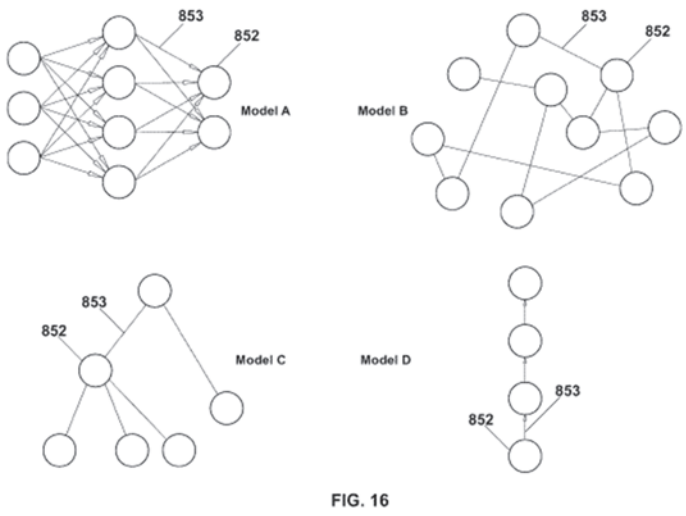
’743 Application at [152:1-2].

ACAAO Unit 100 can obtain objects and/or their properties in Area of Interest 450 in 2D Computer Game 18c. For instance, Area of Interest 450 in 2D Computer Game 18c may include Ships 605c1- 605c3, etc., Ships 615c1-615c3, etc., and/or other objects. Properties of each of the objects may include a location defined by coordinates. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Area of Interest 450 in 2D Computer Game 18c. ACAAO Unit 100 can also obtain Instruction Sets 526 used or executed in

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	operating Ships 605c1-605c3, etc. ACAAO Unit 100 can also optionally obtain any Extra Info 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.) related to Ships' 605c1-605c3, etc. operation. As User 50 operates Ships 605c1-605c3, etc. in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Ships' 605c1-605c3, etc. operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Area of Interest 450 in 2D Computer Game 18c with one or more Instruction Sets 526 used or executed in operating Ships 605c1-605c3, etc. Any Extra Info 527 related to Ships' 605c1-605c3, etc. operation may also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). '743 Application at [152:14-29]. Any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Avatars 605 in circumstances including objects with various properties. In turn, any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. A remote ACAAO Unit 100 can be offered as a network service (i.e. on line application, etc.). In some aspects; a remote ACAAO Unit 100 (i.e. global ACAAO Unit 100, etc.) may reside on the Internet and be available to all the world's Computing Devices 70, Processors 11, Application Programs 18, and/or other elements configured to transmit operations of their Avatars 605 in circumstances including objects with various properties and/or configured to utilize the remote ACAAO Unit 100

	for autonomous operation of their Avatars 605. For example, multiple players (i.e. Users 50, etc.) may operate their Avatars 605 in a computer game (i.e. Application Program 18, etc.) running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Avatar's 605 operations in circumstances including objects with various properties to a remote ACAA.O Unit 100. Such remote ACAAO Unit 100 enables learning of the players' collective knowledge of operating Avatar 605 in circumstances including objects with various properties. '743 Application at [87:34-88:8]. In such embodiments, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Soldiers 605a in circumstances including objects with various properties. In tum, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Soldiers 605a. For example, multiple Users 50 (i.e. game players, etc.) may operate their Soldiers 605a in 3D Computer Game 18a running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Soldiers' 605a operations in circumstances including objects with various properties to a remote ACAAO Unit 100. Such remote ACAAO Unit 100 enables learning of the game players' collective knowledge of operating Soldier 605a in circumstances including objects with various properties. '743 Application at [148:23-32].

	 FIG. 16 ’743 Application at [Fig. 16].
and wherein the third one or more object representations represent one or more objects of the application,	The ’743 Application supports “and wherein the third one or more object representations represent one or more objects of the application.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar’s 605 surrounding within Application Program 18. ’743 Application at [62:14-22].

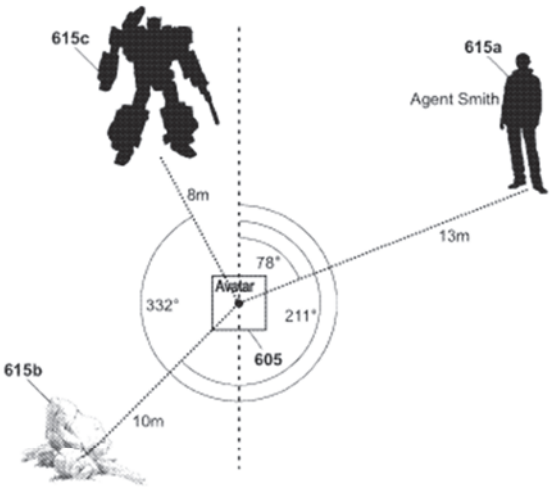


FIG. 5A

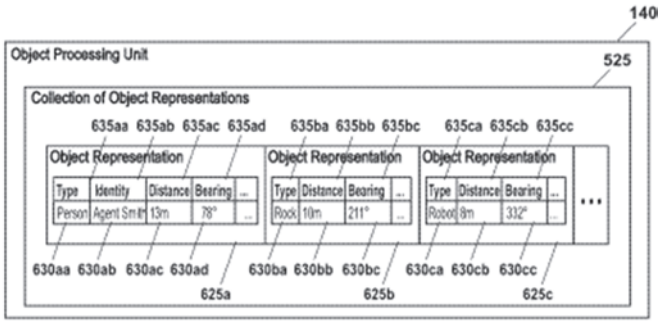


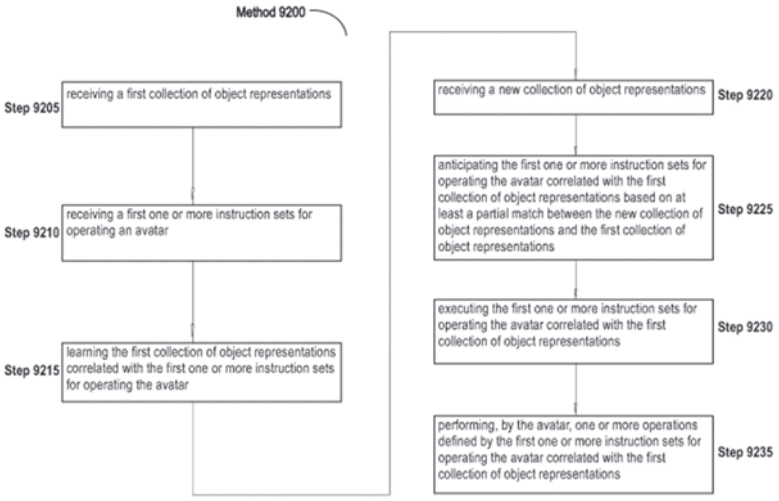
FIG. 5B

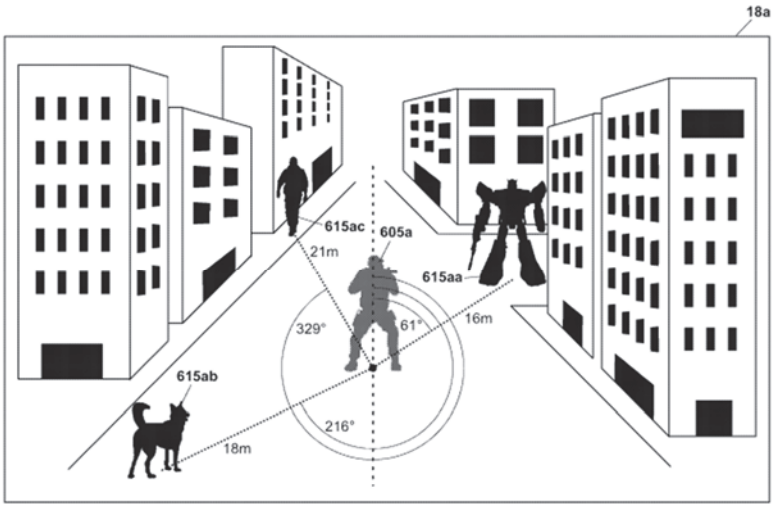
’743 Application at [Figs. 5A-5B].

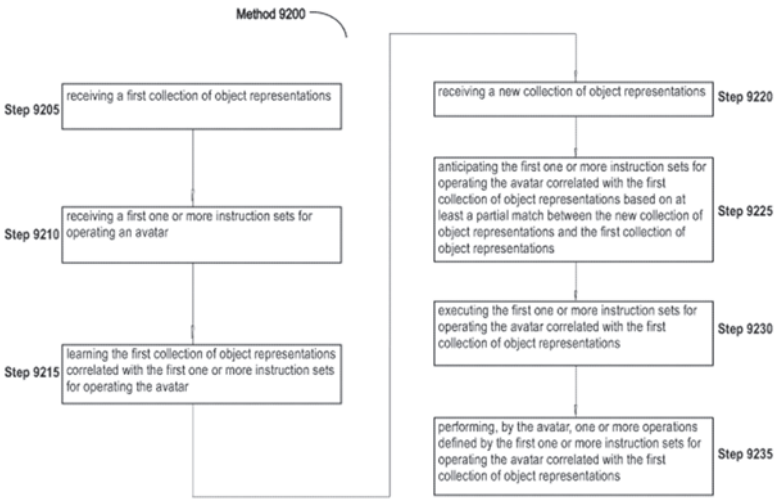
As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc.

’743 Application at [73:27-29].

At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or

	information. In some designs, an object representation includes a representation of an object (i.e. Object 615, etc.) in an avatar's (i.e. Avatar's 605, etc.) surrounding within an application (i.e. Application Program 18, etc.). In other designs, an object representation includes a representation of an object of an application. '743 Application at [135:29-34]. The artificial intelligence unit may be configured to: receive a first collection of object representations, the first collection of object representations including one or more object representations representing one or more objects of the application. '743 Application at [1:27-29].
and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user,	The '743 Application supports "and wherein at least a portion of the first correlation is learned in a learning process that includes operating the first avatar of the application at least partially by a user." For example, the '734 Application discloses:  FIG. 31 '743 Application at [Fig. 31]. Referring to Fig. 31, the illustration shows an embodiment of a method 9200 for learning and/or using

	an avatar's circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar's operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances. '743 Application at [143:28-31]. At step 9215, the first collection of object representations correlated with the first one or more instruction sets for operating the avatar are learned. '743 Application at [144:1-2].  FIG. 36 '743 Application at [Fig. 36]. As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier's 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier's 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a. '743 Application at [147:38-148:2].

and wherein at least a portion of the third correlation is learned in another learning process that includes operating the third avatar of the application at least partially by: the user, or another user,	The ’743 Application supports “and wherein at least a portion of the third correlation is learned in another learning process that includes operating the third avatar of the application at least partially by: the user, or another user.” For example, the ’734 Application discloses:  FIG. 31 ’743 Application at [Fig. 31]. At step 9215, the first collection of object representations correlated with the first one or more instruction sets for operating the avatar are learned. ’743 Application at [144:1-2].

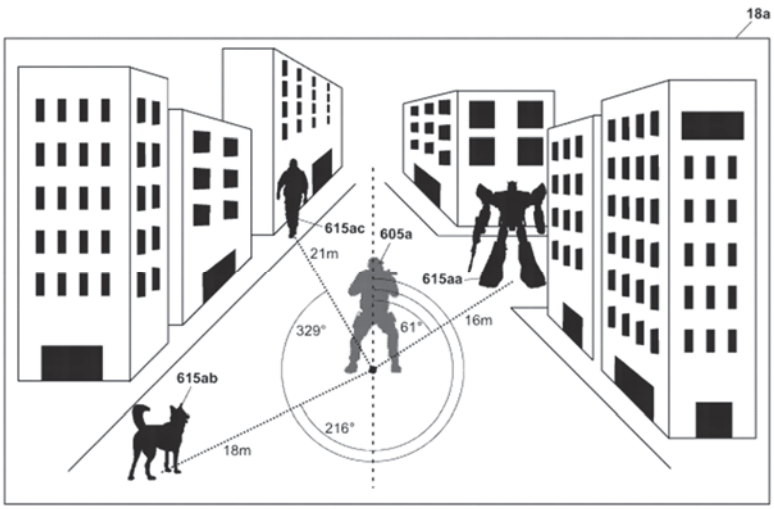


FIG. 36

’743 Application at [Fig. 36].

As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier’s 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier’s 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a.

’743 Application at [147:38-148:2].

In some embodiments, the artificial intelligence unit is further configured to: receive a second collection of object representations, the second collection of object representations including one or more object representations representing one or more objects of the application; receive a second one or more instruction sets for operating an avatar of the application; and learn the second collection of object representations correlated with the second one or more instruction sets for operating the avatar of the application.

’743 Application at [14:12-16].

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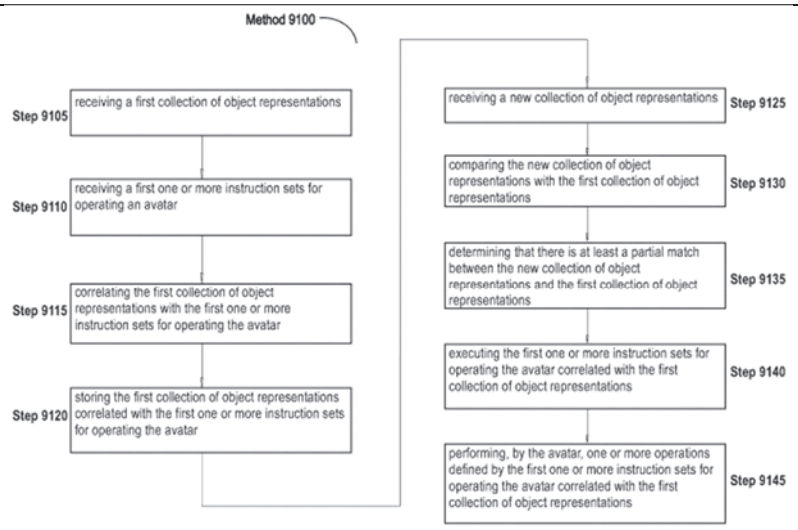


FIG. 30

’743 Application at [Fig. 30 - “learning process”].

Referring to Fig. 30, the illustration shows an embodiment of a method 9100 for learning and/or using an avatar’s circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar’s operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances.

’743 Application at [135:22-25].

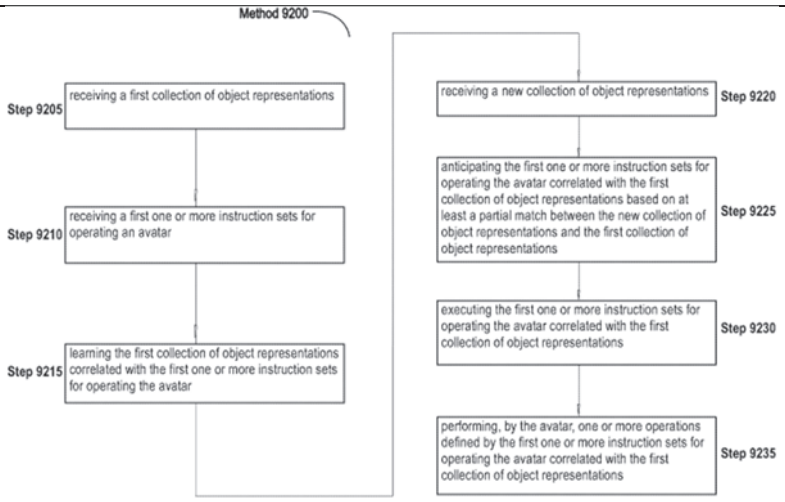


FIG. 31

’743 Application at [Fig. 31 - “another learning process”].

Referring to Fig. 31, the illustration shows an embodiment of a method 9200 for learning and/or using an avatar’s circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar’s operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances.

’743 Application at [143:28-31].

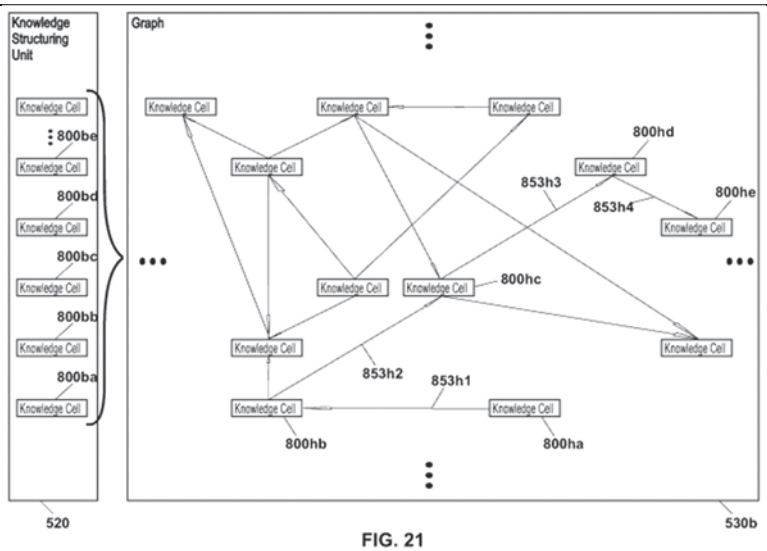


FIG. 21

’743 Application at [Fig. 21 - “learning process”].

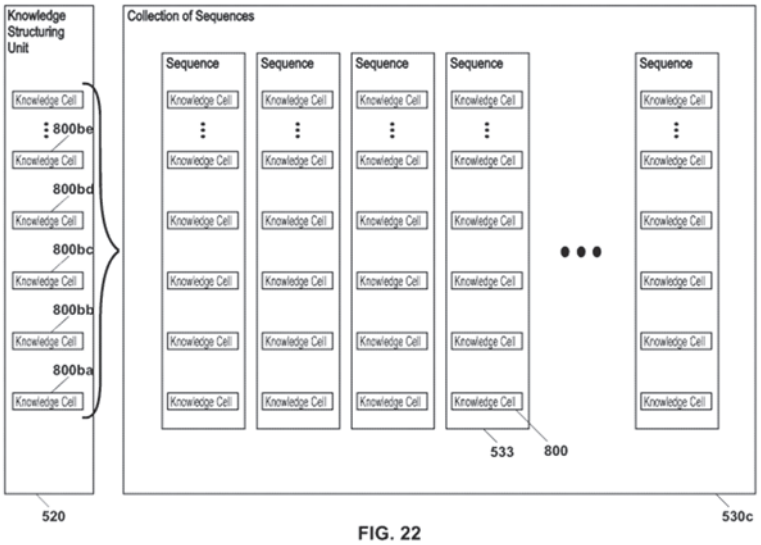


FIG. 22

’743 Application at [Fig. 22 - “another learning process”].

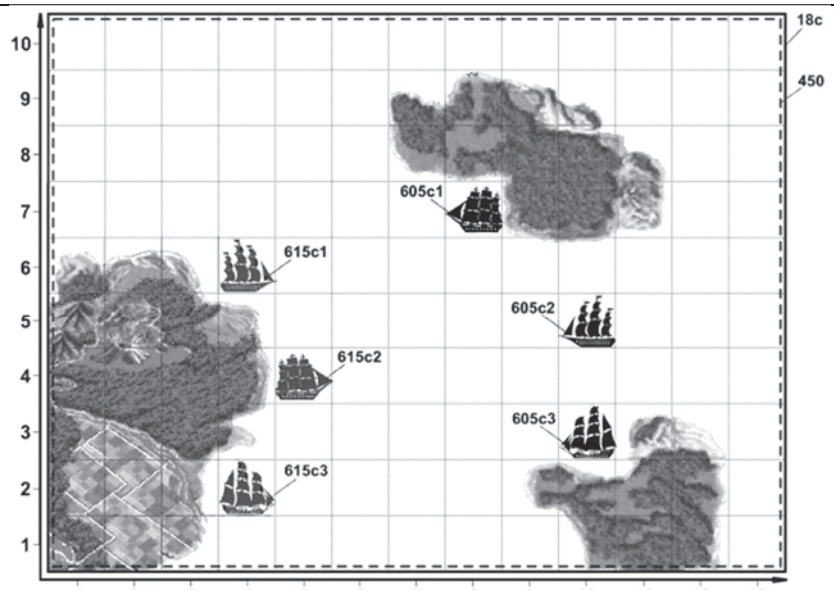


FIG. 39

’743 Application at [Fig. 39 - “first avatar of application”: Ship 605c1; “third avatar of the application”: Ship 605c2].

Referring to Fig. 39, in some exemplary embodiments, Application Program 18 may be or include a 2D Computer Game 18c comprising multiple Avatars 605 that User 50 can control or operate.

’743 Application at [152:1-2].

ACAAO Unit 100 can obtain objects and/or their properties in Area of Interest 450 in 2D Computer Game 18c. For instance, Area of Interest 450 in 2D Computer Game 18c may include Ships 605c1- 605c3, etc., Ships 615c1-615c3, etc., and/or other objects. Properties of each of the objects may include a location defined by coordinates. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Area of Interest 450 in 2D Computer Game 18c. ACAAO Unit 100 can also obtain Instruction Sets 526 used or executed in

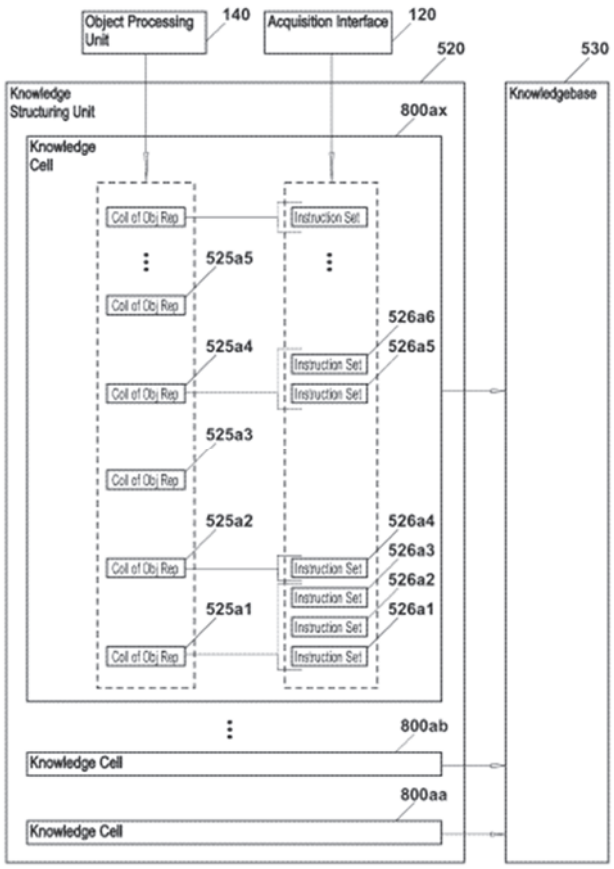
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	operating Ships 605c1-605c3, etc. ACAAO Unit 100 can also optionally obtain any Extra Info 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.) related to Ships' 605c1-605c3, etc. operation. As User 50 operates Ships 605c1-605c3, etc. in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Ships' 605c1-605c3, etc. operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Area of Interest 450 in 2D Computer Game 18c with one or more Instruction Sets 526 used or executed in operating Ships 605c1-605c3, etc. Any Extra Info 527 related to Ships' 605c1-605c3, etc. operation may also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). '743 Application at [152:14-29]. Any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Avatars 605 in circumstances including objects with various properties. In turn, any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. A remote ACAAO Unit 100 can be offered as a network service (i.e. on line application, etc.). In some aspects; a remote ACAAO Unit 100 (i.e. global ACAAO Unit 100, etc.) may reside on the Internet and be available to all the world's Computing Devices 70, Processors 11, Application Programs 18, and/or other elements configured to transmit operations of their Avatars 605 in circumstances including objects with various properties and/or configured to utilize the remote ACAAO Unit 100

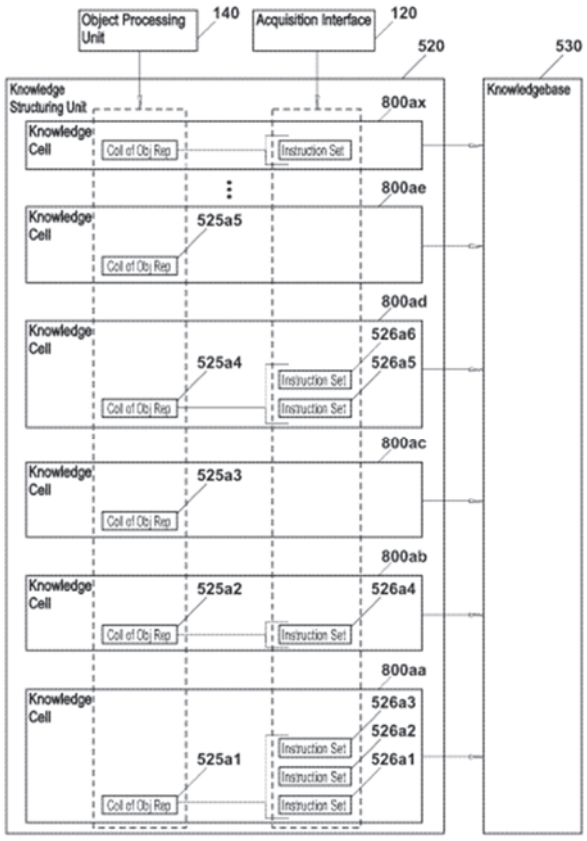
	for autonomous operation of their Avatars 605. For example, multiple players (i.e. Users 50, etc.) may operate their Avatars 605 in a computer game (i.e. Application Program 18, etc.) running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Avatar's 605 operations in circumstances including objects with various properties to a remote ACAA.O Unit 100. Such remote ACAAO Unit 100 enables learning of the players' collective knowledge of operating Avatar 605 in circumstances including objects with various properties. '743 Application at [87:34-88:8]. In such embodiments, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Soldiers 605a in circumstances including objects with various properties. In tum, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Soldiers 605a. For example, multiple Users 50 (i.e. game players, etc.) may operate their Soldiers 605a in 3D Computer Game 18a running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Soldiers' 605a operations in circumstances including objects with various properties to a remote ACAAO Unit 100. Such remote ACAAO Unit 100 enables learning of the game players' collective knowledge of operating Soldier 605a in circumstances including objects with various properties. '743 Application at [148:23-32].
and wherein the user is: a human user, or a non-human user, and	The '743 Application supports "and wherein the user is: a human user, or a non-human user, and wherein the another user is: a human user, or a non-human user." For

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wherein the another user is: a human user, or a non-human user;	example, the ’734 Application discloses: User 50 (also referred to simply as user or other suitable name or reference) comprises a human user or non-human user. A non-human User 50 includes any device, system, program, and/or other mechanism for operating or controlling Application Program 18, Avatar 605, Computing Device 70, and/or elements thereof. For example, User 50 may issue an operating direction to Application Program 18 responsive to which Application Program’s 18 instructions or instruction sets may be executed by Processor 11 to perform a desired operation with/on Avatar 605. User’s 50 operating directions comprise any user inputted data (i.e. values, text, symbols, etc.), directions (i.e. move right, move up, move forward, copy an item, click on a link, etc.), instructions or instruction sets (i.e. manually inputted instructions or instruction sets, etc.), and/or other inputs or information. A non-human User 50 can utilize more suitable interfaces instead of, or in addition to, Human-machine Interface 23 and/or Display 21 for controlling Application Program 18, Avatar 605, Computing Device 70, and/or elements thereof. Examples of such interfaces include an application programming interface (API), bridge (i.e. bridge between applications, devices, or systems, etc.), driver, socket, direct or operative connection, handle, function/routine/subroutine, and/or other interfaces. ’743 Application at [61:23-35].
Support for Limitation(s) Unique to Substitute Claim 29 (which is based on Original Claim 14)	
wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation	The ’743 Application supports “wherein the first correlation is included in a knowledgebase, and wherein the knowledgebase further includes a third correlation including a third one or more object representations correlated with a third one or more instruction sets for operating an avatar of another application.” For example, the ’734 Application discloses:

including a third one or more object representations correlated with a third one or more instruction sets for operating an avatar of another application,	 FIG. 12 ’743 Application at [Fig. 12]. For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown).

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	Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].  FIG. 13

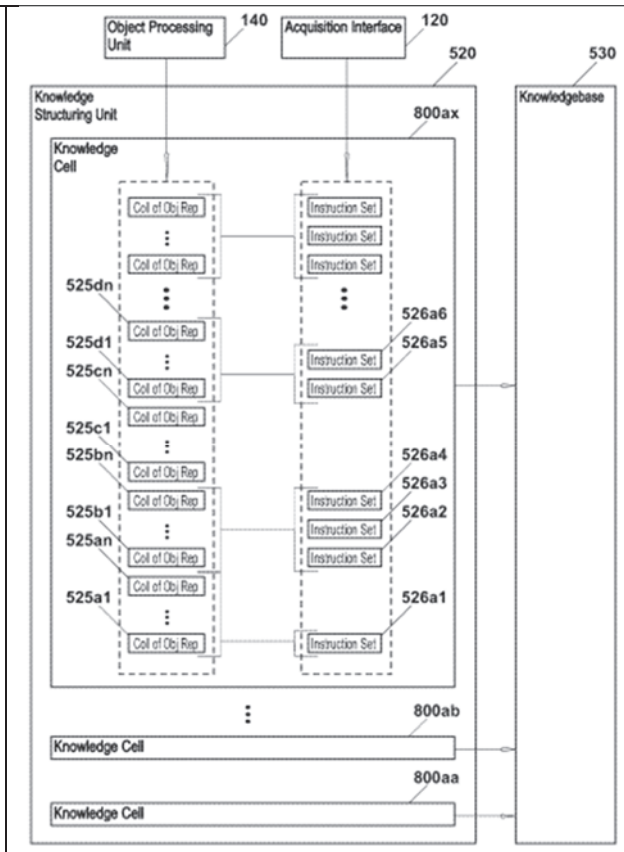


FIG. 14

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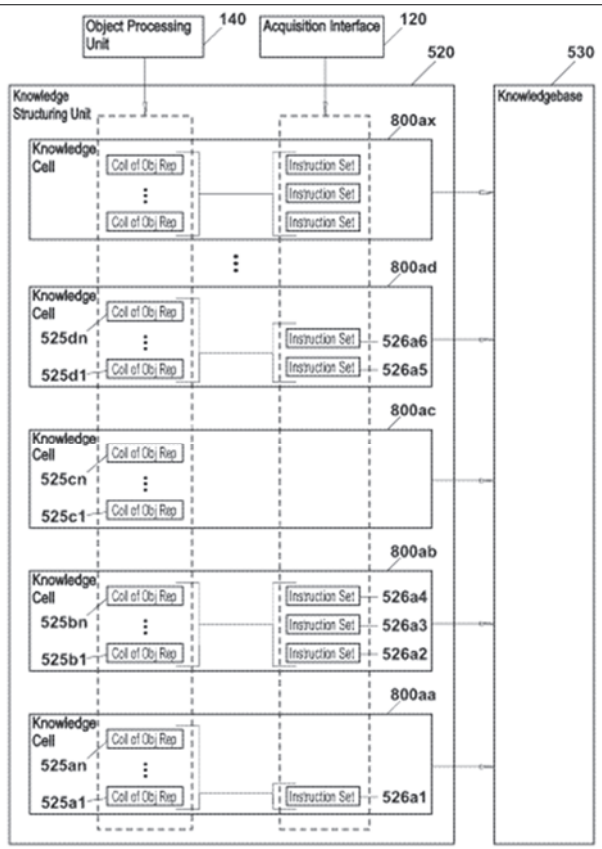


FIG. 15

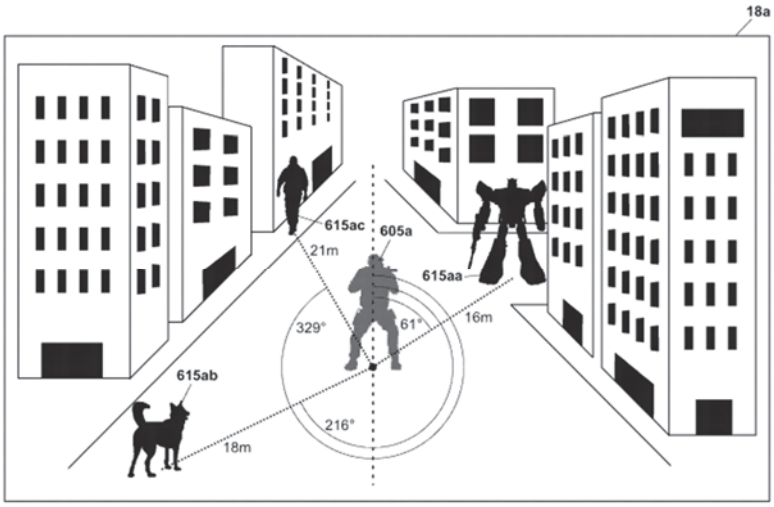
’743 Application at [Figs. 13-15].

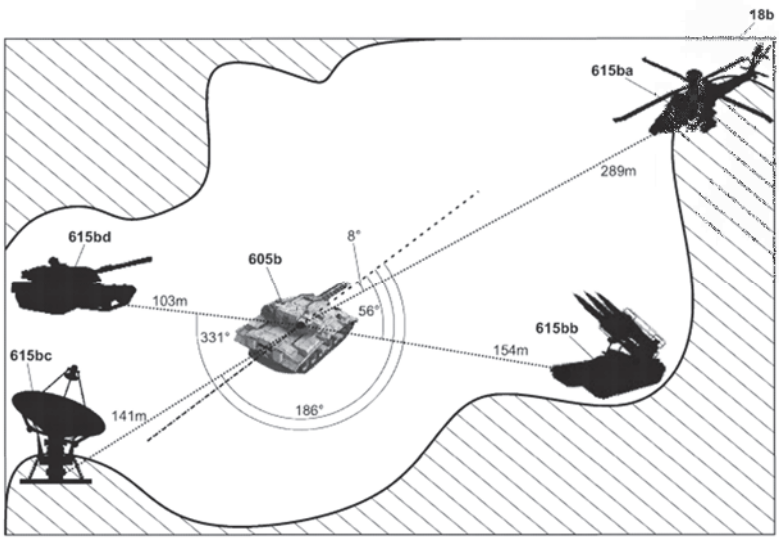
A collection of object representations correlated with one or more instruction sets may be part of a stored plurality of collections of object representations correlated with one or more instruction sets. Collections of object representations correlated with any instruction sets can be stored in a memory unit or other repository.

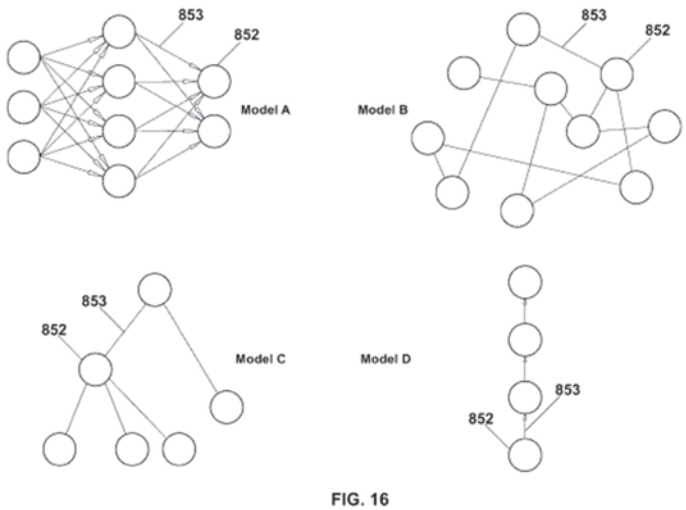
’743 Application at [139:13-16].

Any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Avatars 605 in circumstances including objects with various properties. In turn, any number of Computing Devices 70, Processors 11, Application Programs 18,

	and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. A remote ACAAO Unit 100 can be offered as a network service (i.e. on line application, etc.). In some aspects; a remote ACAAO Unit 100 (i.e. global ACAAO Unit 100, etc.) may reside on the Internet and be available to all the world's Computing Devices 70, Processors 11, Application Programs 18, and/or other elements configured to transmit operations of their Avatars 605 in circumstances including objects with various properties and/or configured to utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. For example, multiple players (i.e. Users 50, etc.) may operate their Avatars 605 in a computer game (i.e. Application Program 18, etc.) running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Avatar's 605 operations in circumstances including objects with various properties to a remote ACAA.O Unit 100. Such remote ACAAO Unit 100 enables learning of the players' collective knowledge of operating Avatar 605 in circumstances including objects with various properties. '743 Application at [87:34-88:8]. In such embodiments, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Soldiers 605a in circumstances including objects with various properties. In tum, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Soldiers 605a. For example, multiple Users 50 (i.e. game players, etc.) may operate their Soldiers 605a in 3D Computer Game 18a running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may

	be configured to transmit Soldiers' 605a operations in circumstances including objects with various properties to a remote ACAAO Unit 100. Such remote ACAAO Unit 100 enables learning of the game players' collective knowledge of operating Soldier 605a in circumstances including objects with various properties. '743 Application at [148:23-32].  FIG. 36 '743 Application at [Fig. 36 - "avatar of first application": Soldier 605a of Computer Game 18a]. ACAAO Unit 100 can obtain objects (i.e. Opponent 615aa, Dog 615ab, Pedestrian 615ac, etc.) and/or their properties in Soldier's 605a surrounding within 3D Computer Game 18a. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier's 605a surrounding. ACAAO Unit 100 can also obtain instruction Sets 526 used or executed in operating Soldier 605a. ACAAO Unit 100 can also optionally obtain any Extra 111fo 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.) related to Soldier's 605a operation. As

	User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier's 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier's 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a. Any Extra Info 527 related to Soldier's 605a operation may also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.) '743 Application at [147:32-148:5].  FIG. 37 '743 Application at [Fig. 37 - "avatar of another application": Tank 605b of Computer Game 18b]. Computing Device 70 may include or be coupled to ACAAO Unit 100. ACAAO Unit 100 can obtain objects (i.e. Helicopter 615ba, Rocket Launcher 615bb, Communication Center 615bc, Tank 615bd, etc.) and/or their properties in Tank's 605b surrounding within 2D Computer Game 18b. ACAAO Unit 100 may create or

	generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Tank's 605b surrounding. ACAAO Unit 100 can also obtain instruction Sets 526 used or executed in operating Tank 605b. ACAAO Unit 100 can also optionally obtain any Extra Info 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.) related to Tank's 605b operation. As User 50 operates Tank 605b in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Tank's 605b operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Tank's 605b surrounding with one or more Instruction Sets 526 used or executed in operating Tank 605b. Any Extra Info 527 related to Tank's 605b operation may also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). '743 Application at [150:18-31].  FIG. 16 '743 Application at [Fig. 16].

and wherein the third one or more object representations represent one or more objects of the another application;	The ’743 Application supports “and wherein the third one or more object representations represent one or more objects of the another application.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar’s 605 surrounding within Application Program 18. ’743 Application at [62:14-22].

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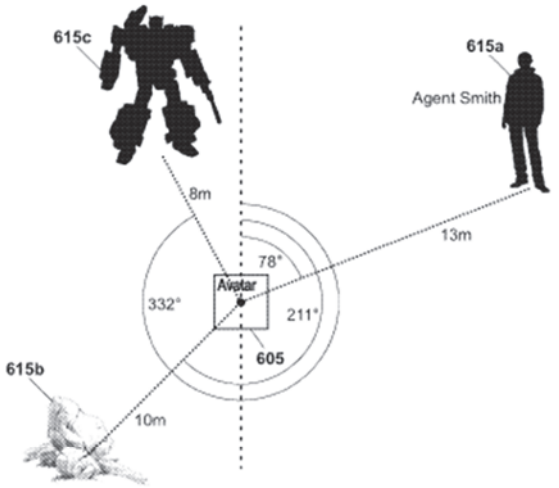


FIG. 5A

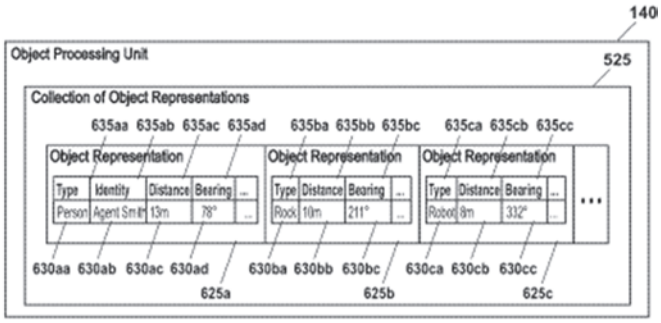


FIG. 5B

’743 Application at [Figs. 5A-5B].

As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc.

’743 Application at [73:27-29].

At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or information. In some designs, an object representation

	includes a representation of an object (i.e. Object 615, etc.) in an avatar's (i.e. Avatar's 605, etc.) surrounding within an application (i.e. Application Program 18, etc.). In other designs, an object representation includes a representation of an object of an application. '743 Application at [135:29-34]. The artificial intelligence unit may be configured to: receive a first collection of object representations, the first collection of object representations including one or more object representations representing one or more objects of the application. '743 Application at [1:27-29]. Any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Avatars 605 in circumstances including objects with various properties. In turn, any number of Computing Devices 70, Processors 11, Application Programs 18, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. A remote ACAAO Unit 100 can be offered as a network service (i.e. on line application, etc.). In some aspects; a remote ACAAO Unit 100 (i.e. global ACAAO Unit 100, etc.) may reside on the Internet and be available to all the world's Computing Devices 70, Processors 11, Application Programs 18, and/or other elements configured to transmit operations of their Avatars 605 in circumstances including objects with various properties and/or configured to utilize the remote ACAAO Unit 100 for autonomous operation of their Avatars 605. For example, multiple players (i.e. Users 50, etc.) may operate their Avatars 605 in a computer game (i.e. Application Program 18, etc.) running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit

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	Avatar's 605 operations in circumstances including objects with various properties to a remote ACAA.O Unit 100. Such remote ACAAO Unit 100 enables learning of the players' collective knowledge of operating Avatar 605 in circumstances including objects with various properties. '743 Application at [87:34-88:8]. In such embodiments, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements may connect to such remote ACAAO Unit 100 and the remote ACAAO Unit 100 may learn operations of their Soldiers 605a in circumstances including objects with various properties. In tum, any number of Computing Devices 70, Processors 11, 30 Computer Games 18a, and/or other elements can utilize the remote ACAAO Unit 100 for autonomous operation of their Soldiers 605a. For example, multiple Users 50 (i.e. game players, etc.) may operate their Soldiers 605a in 3D Computer Game 18a running on their respective Computing Devices 70 where the Computing Devices 70 and/or elements thereof may be configured to transmit Soldiers' 605a operations in circumstances including objects with various properties to a remote ACAAO Unit 100. Such remote ACAAO Unit 100 enables learning of the game players' collective knowledge of operating Soldier 605a in circumstances including objects with various properties. '743 Application at [148:23-32].

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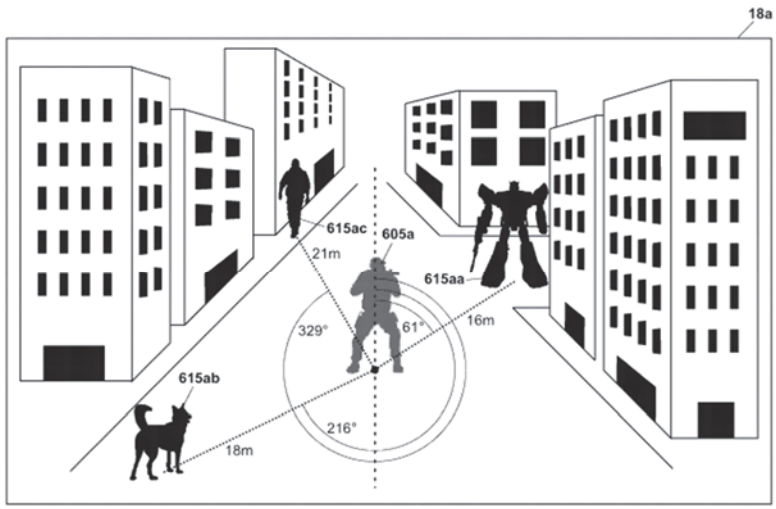
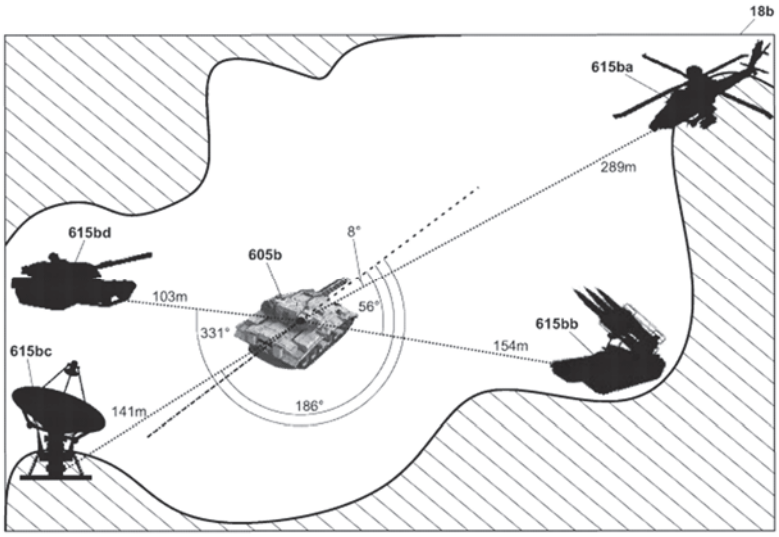


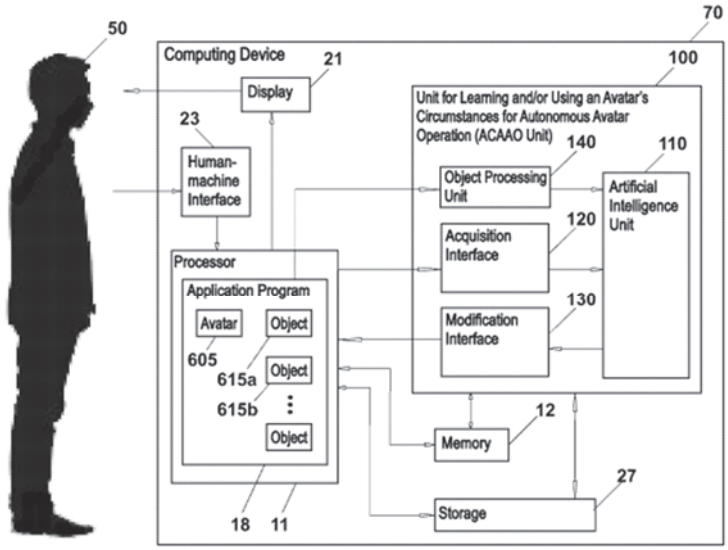
FIG. 36

’743 Application at [Fig. 36 - “objects of first application”: Opponent 615aa, Dog 615ab, and Pedestrian 615ac of Computer Game 18a].

ACAAO Unit 100 can obtain objects (i.e. Opponent 615aa, Dog 615ab, Pedestrian 615ac, etc.) and/or their properties in Soldier’s 605a surrounding within 3D Computer Game 18a. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier’s 605a surrounding. ACAAO Unit 100 can also obtain instruction Sets 526 used or executed in operating Soldier 605a. ACAAO Unit 100 can also optionally obtain any Extra 111fo 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.) related to Soldier’s 605a operation. As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier’s 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier’s 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a. Any Extra Info 527 related to Soldier’s 605a operation may

	also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.) '743 Application at [147:32-148:5].  FIG. 37 '743 Application at [Fig. 37 - "objects of another application": Helicopter 615ba, Rocket Launcher 615bb, Communication Center 615bc, and Tank 615bd of Computer Game 18b]. Computing Device 70 may include or be coupled to ACAAO Unit 100. ACAAO Unit 100 can obtain objects (i.e. Helicopter 615ba, Rocket Launcher 615bb, Communication Center 615bc, Tank 615bd, etc.) and/or their properties in Tank's 605b surrounding within 2D Computer Game 18b. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Tank's 605b surrounding. ACAAO Unit 100 can also obtain instruction Sets 526 used or executed in operating

	Tank 605b. ACAAO Unit 100 can also optionally obtain any Extra Info 527 (i.e. time, location, computed, visual, acoustic, contextual, and/or other information, etc.) related to Tank's 605b operation. As User 50 operates Tank 605b in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Tank's 605b operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Tank's 605b surrounding with one or more Instruction Sets 526 used or executed in operating Tank 605b. Any Extra Info 527 related to Tank's 605b operation may also optionally be correlated with Collections of Object Representations 525. ACAAO Unit 100 can store this knowledge into Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). '743 Application at [150:18-31].
Support for Limitation(s) Unique to Substitute Claim 30 (which is based on Original Claim 15)	
wherein the first one or more instruction sets for operating the first avatar of the application include one or more information about one or more states of: the first avatar of the application or a portion of the first avatar of the application;	The '743 Application supports "wherein the first one or more instruction sets for operating the first avatar of the application include one or more information about one or more states of: the first avatar of the application or a portion of the first avatar of the application." For example, the '734 Application discloses: In further embodiments, the first one or more instruction sets for operating the avatar of the application include at least one of: a command, a keyword, a symbol, an instruction, an operator, a variable, a value, an object, a data structure, a function, a parameter, a state, a signal, an input, an output, a character, a digit, or a reference thereto. '743 Application at [4:24-27]. In general, Instruction Set 526 may include one or more instructions, commands, keywords, symbols (i.e.

	parentheses, brackets, commas, semicolons, etc.), operators (i.e.=,<,>, etc.), variables, values, objects, data structures, functions (i.e. Function1 (), FIRST(), MIN(), SQRT(), etc.), parameters, states, signals, inputs, outputs, characters, digits, references thereto, and/or other components. '743 Application at [85:37-86:2].
Support for Limitation(s) Unique to Substitute Claim 31 (which is based on Original Claim 16)	
wherein: an element of the first correlation is deleted after the first correlation is generated, an element of the first correlation is modified after the first correlation is generated, an element of the first correlation is manipulated after the first correlation is generated, or an element is inserted into the first correlation after the first correlation is generated;	The '743 Application supports "wherein: an element of the first correlation is deleted after the first correlation is generated, an element of the first correlation is modified after the first correlation is generated, an element of the first correlation is manipulated after the first correlation is generated, or an element is inserted into the first correlation after the first correlation is generated." For example, the '734 Application discloses:  FIG. 2

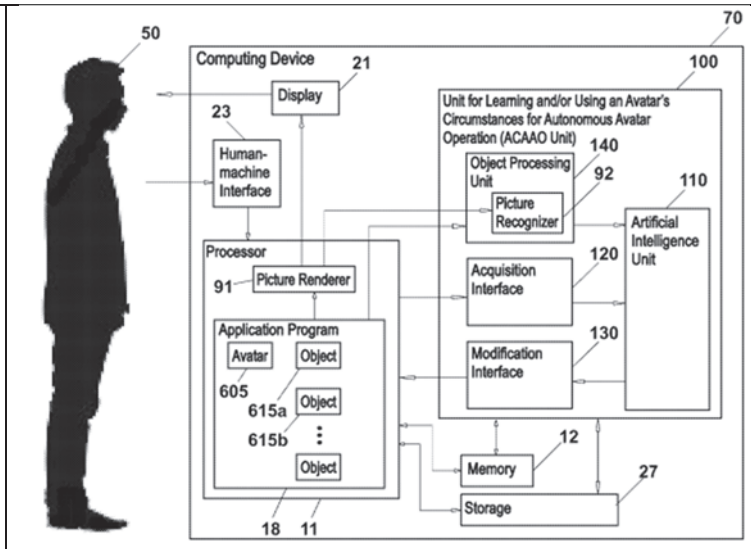


FIG. 3

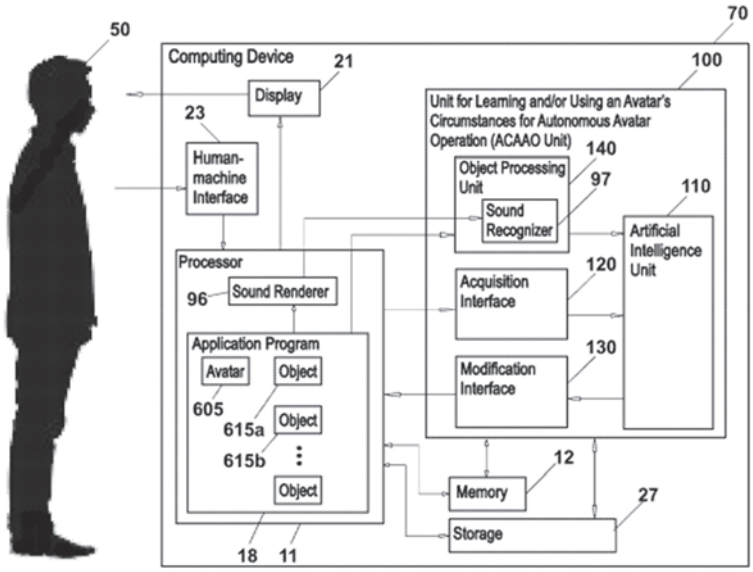


FIG. 4

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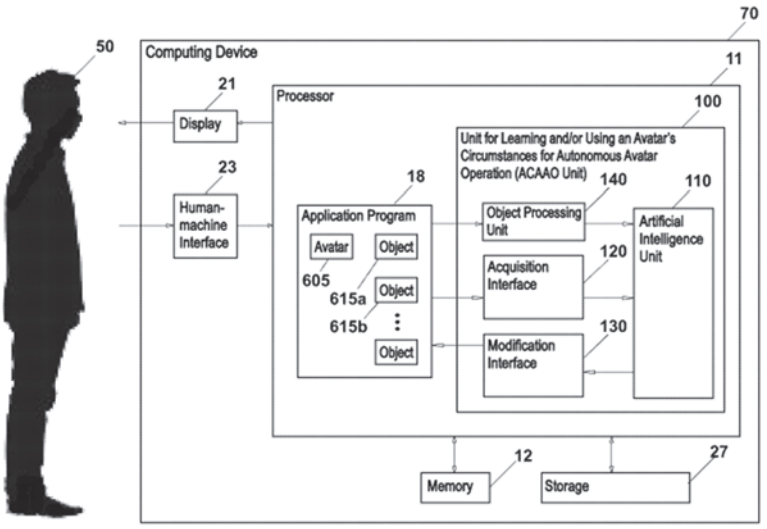


FIG. 9

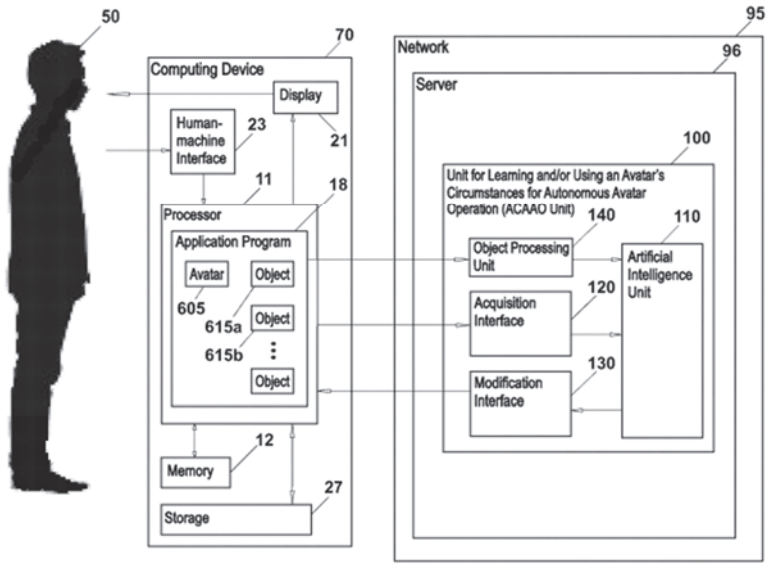


FIG. 10

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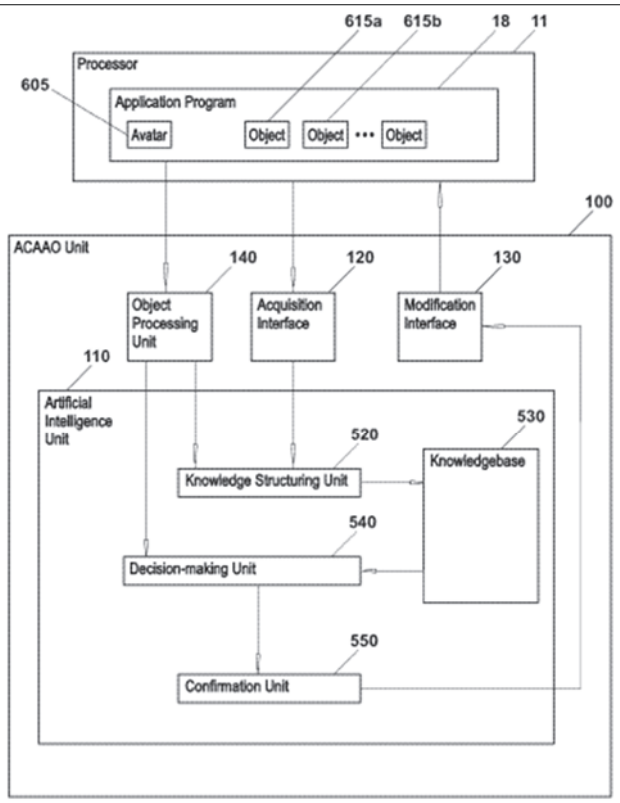


FIG. 11

’743 Application at [Figs. 2-4 and 9-11 - modification interface 130].

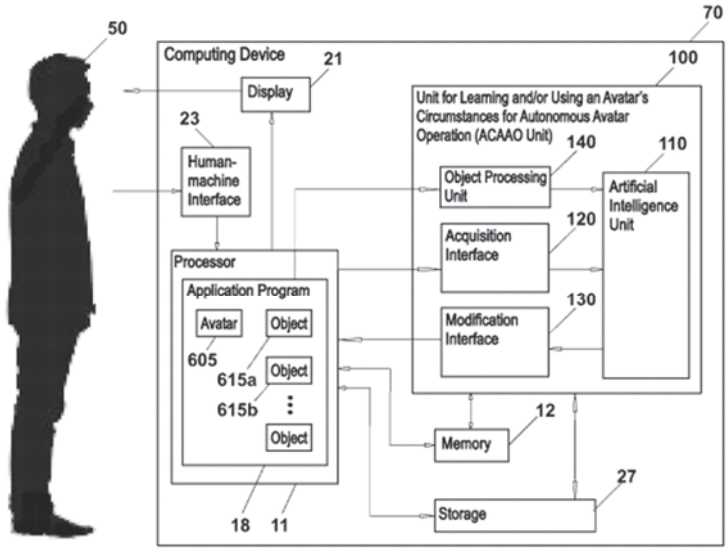
Modification Interface 130 can access, create, delete, modify, and/or otherwise manipulate functions, methods, procedures, routines, subroutines, and/or other elements of Avatar 605 and/or Application Program 18. In further aspects, Modification Interface 130 can access, create, delete, modify, and/or otherwise manipulate source code, bytecode, compiled code, interpreted code, translated code, machine code, and/or other code. In further aspects, Modification Interface 130 can access, create, delete, modify, and/or otherwise manipulate values, variables, parameters, and/or other data or information.

’743 Application at [127:26-32].

Unit 100-generated instructions or instruction sets. In another example, ACAAO Unit 100 can insert or embed ACAAO Unit 100-generated instructions or instruction

	sets among the original instructions or instruction sets. ’743 Application at [75:13-14]. In further embodiments, the causing the processor circuit to execute the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations includes modifying one or more instruction sets of the avatar of the application. ’743 Application at [10:20-23]. ACAAO Unit 100 comprises the functionality for modifying instruction sets, data, and/or other information used, implemented, and/or executed by Avatar 605, Application Program 18, Processor 11, and/or other processing element. ’743 Application at [74:20-22]. Confirmation Unit 550 comprises the functionality for confirming, modifying, evaluating (i.e. rating, etc.), and/or canceling one or more anticipatory Instruction Sets 526, and/or other functionalities. ’743 Application at [89:9-10] .
Support for Limitation(s) Unique to Substitute Claim 32 (which is based on Original Claim 17)	
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	The ’743 Application supports “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 avatar of the application, or a copy of the first one or more instruction sets for operating the first avatar of the application.” For example, the ’734 Application discloses: In further embodiments, the causing the processor circuit to execute the first one or more instruction sets for

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avatar of the application, or a copy of the first one or more instruction sets for operating the first avatar of the application, and	operating the avatar of the application correlated with the first collection of object representations includes modifying one or more instruction sets of the avatar of the application. '743 Application at [10:20-23]. ACAAO Unit 100 comprises the functionality for modifying instruction sets, data, and/or other information used, implemented, and/or executed by Avatar 605, Application Program 18, Processor 11, and/or other processing element. '743 Application at [74:20-22]. In further aspects, executing includes modifying one or more instruction sets of the avatar and/or application. '743 Application at [142:29-30].  FIG. 2

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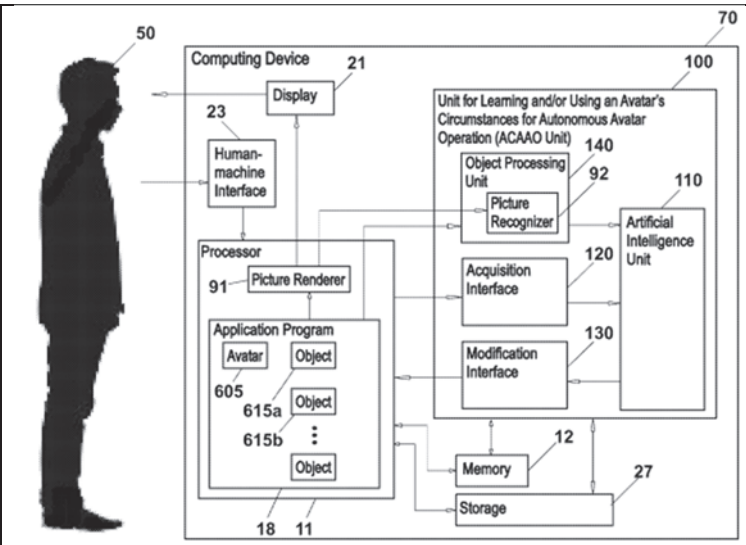


FIG. 3

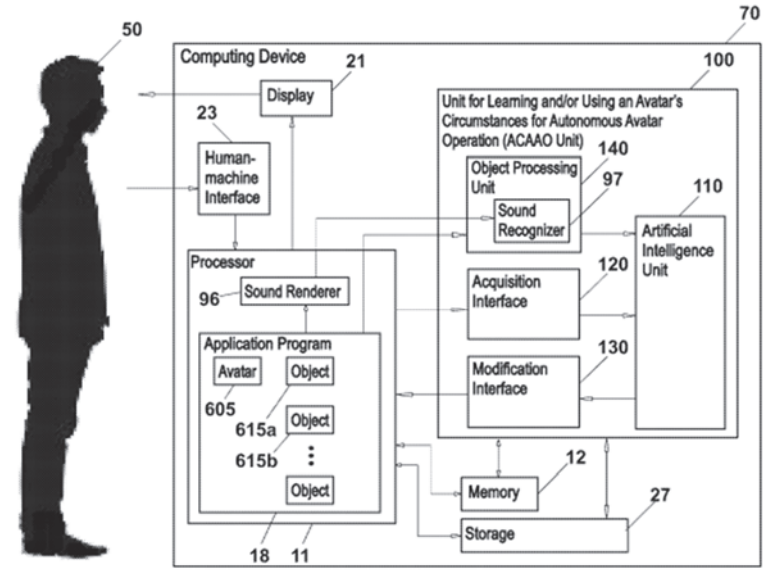


FIG. 4

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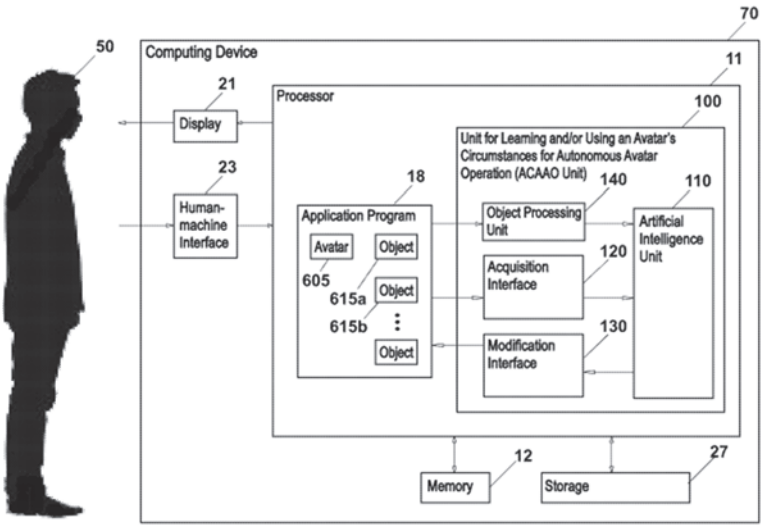


FIG. 9

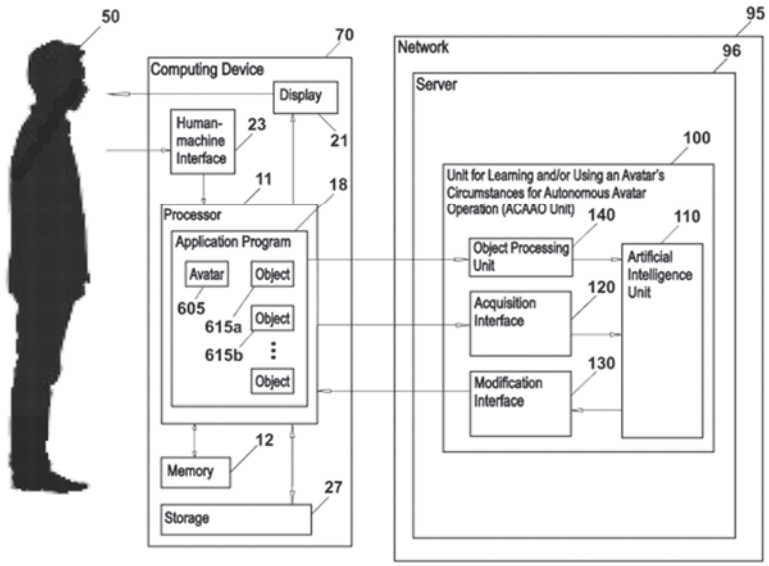
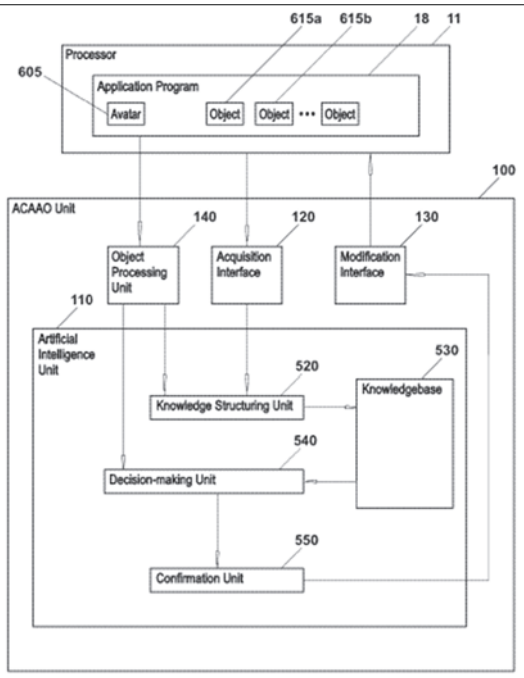


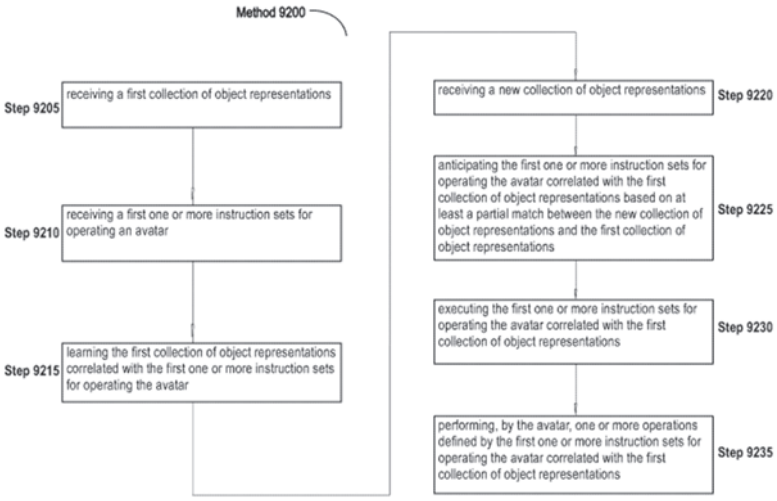
FIG. 10

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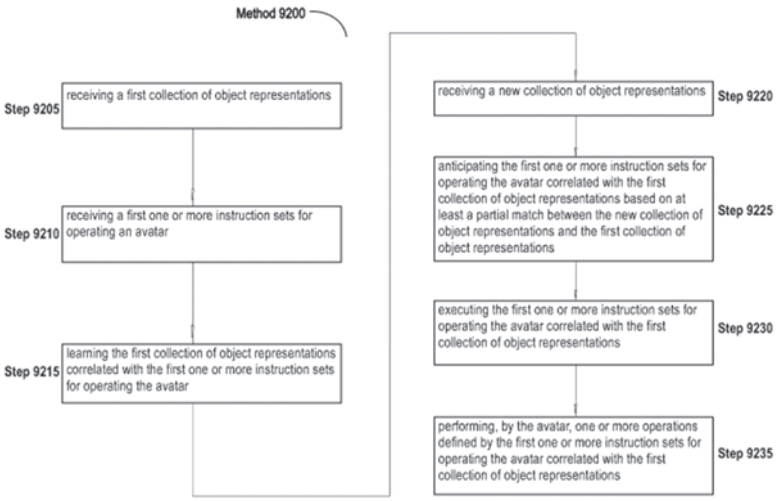
	 FIG. 11 '743 Application at [Figs. 2-4 and 9-11 - modification interface 130]. Modification Interface 130 comprises the functionality for modifying execution and/or functionality of Avatar 605, Application Program 18, Processor 11, and/or other processing element based on anticipatory Instruction Sets 526. '743 Application at [127:11-12]. Confirmation Unit 550 comprises the functionality for confirming, modifying, evaluating (i.e. rating, etc.), and/or canceling one or more anticipatory Instruction Sets 526, and/or other functionalities. '743 Application at [89:9-10].
wherein the executing the first one or more instruction sets for operating the first avatar of the	The '743 Application supports "and wherein the executing the first one or more instruction sets for operating the first avatar of the application includes executing: the modified the first one or more instruction sets for operating the first avatar of the application, or

application includes executing: the modified the first one or more instruction sets for operating the first avatar of the application, or the modified the copy of the first one or more instruction sets for operating the first avatar of the application, and wherein the performing, by the first avatar of the application or by the second avatar of the application, the one or more operations defined by the first one or more instruction sets for operating the first avatar of the application includes performing, by the first avatar of the application or by the second avatar of the application, one or more operations defined by: the modified the first one or more instruction sets for operating the first avatar of the application, or the modified the copy of the first one or more	the modified the copy of the first one or more instruction sets for operating the first avatar of the application, and wherein the performing, by the first avatar of the application or by the second avatar of the application, the one or more operations defined by the first one or more instruction sets for operating the first avatar of the application includes performing, by the first avatar of the application or by the second avatar of the application, one or more operations defined by: the modified the first one or more instruction sets for operating the first avatar of the application, or the modified the copy of the first one or more instruction sets for operating the first avatar of the application." For example, the '734 Application discloses: For example, when an event occurs and an appropriate event handler is called, instrumentation can be implemented in the application's source code to insert alternate instruction sets (i.e. anticipatory Instruction Sets 526, etc.) at which point the modified source code can be recompiled and/or executed. '743 Application at [132:32-34]. The rewritten executable may then be executed including any new or modified functionality. '743 Application at [134:22-22]. The artificial intelligence unit may be further configured to: cause the processor circuit to execute the fast one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations, the causing performed in response to the anticipating of the artificial intelligence unit, wherein the avatar of the application performs one or more operations denned by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations.

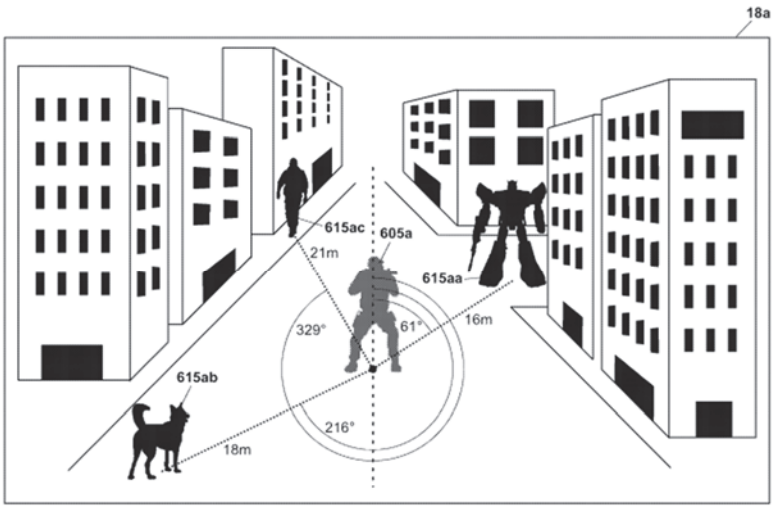
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instruction sets for operating the first avatar of the application;	’743 Application at [1:37-2:3]. The method may further comprise: (f) executing the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations, the executing of (f) performed in response to the anticipating of (e). The method may further comprise: (g) performing, by the avatar of the application, one or more operations defined by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations. ’743 Application at [16:25-29].  FIG. 31 ’743 Application at [Fig. 31]. At step 9230, the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are executed. Step 9230 may include any action or operation described in Step 9140 of method 9100 as applicable. At step 9235, one or more operations defined by the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are performed by the avatar. Step 9235 may include any action or operation

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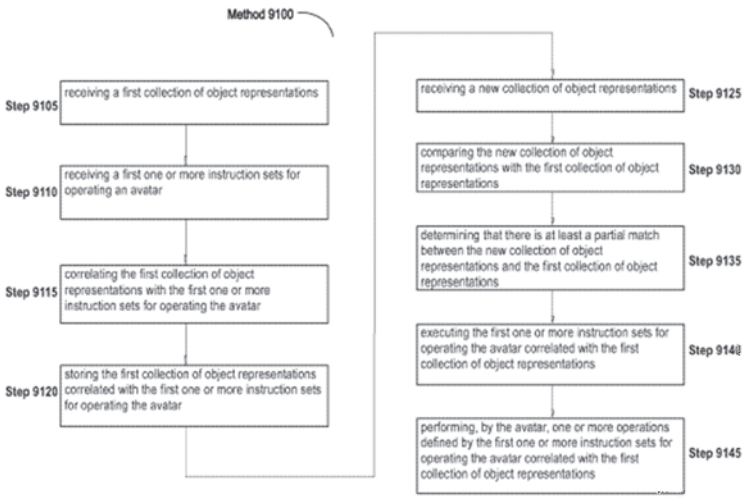
	described in Step 9145 of method 9100 as applicable. ’743 Application at [144:10-15].
Support for Limitation(s) Unique to Substitute Claim 33 (which is based on Original Claim 18)	
wherein at least a portion of the first correlation is learned in a learning process that includes: operating the first avatar of the application at least partially by: a human user, or a non-human user;	The ’743 Application supports “wherein at least a portion of the first correlation is learned in a learning process that includes: operating the first avatar of the application at least partially by: a human user, or a non-human user.” For example, the ’734 Application discloses:  FIG. 31 ’743 Application at [Fig. 31]. Referring to Fig. 31, the illustration shows an embodiment of a method 9200 for learning and/or using an avatar’s circumstances for autonomous avatar operation. In some aspects, the method can be used on a computing device or system to enable learning of an avatar’s operation in circumstances including objects with various properties and enable autonomous avatar operation in similar circumstances. ’743 Application at [143:28-31]. At step 9215, the first collection of object representations

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	correlated with the first one or more instruction sets for operating the avatar are learned. '743 Application at [144:1-2].  FIG. 36 '743 Application at [Fig. 36]. As User 50 operates Soldier 605a in circumstances including objects with various properties as shown, ACAAO Unit 100 may learn Soldier's 605a operation in these circumstances by correlating Collections of Object Representations 525 representing Objects 615 in Soldier's 605a surrounding with one or more Instruction Sets 526 used or executed in operating Soldier 605a. '743 Application at [147:38-148:2]. User 50 (also referred to simply as user or other suitable name or reference) comprises a human user or non-human user. A non-human User 50 includes any device, system, program, and/or other mechanism for operating or controlling Application Program 18, Avatar 605, Computing Device 70, and/or elements thereof. For example, User 50 may issue an operating direction to Application Program 18 responsive to which Application Program's 18 instructions or instruction sets may be

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	executed by Processor 11 to perform a desired operation with/on Avatar 605. User's 50 operating directions comprise any user inputted data (i.e. values, text, symbols, etc.), directions (i.e. move right, move up, move forward, copy an item, click on a link, etc.), instructions or instruction sets (i.e. manually inputted instructions or instruction sets, etc.), and/or other inputs or information. A non-human User 50 can utilize more suitable interfaces instead of, or in addition to, Human-machine Interface 23 and/or Display 21 for controlling Application Program 18, Avatar 605, Computing Device 70, and/or elements thereof. Examples of such interfaces include an application programming interface (API), bridge (i.e. bridge between applications, devices, or systems, etc.), driver, socket, direct or operative connection, handle, function/routine/subroutine, and/or other interfaces. '743 Application at [61:23-35].
generating or receiving the first one or more object representations; and	The '743 Application supports "generating or receiving the first one or more object representations." For example, the '734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in

	Avatar's 605 surrounding within Application Program 18. '743 Application at [62:14-22]. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier's 605a surrounding. '743 Application at [147:33-35].  FIG. 30 '743 Application at [Fig. 30]. At step 9105, a first collection of object representations is received. '743 Application at [135:29-29].

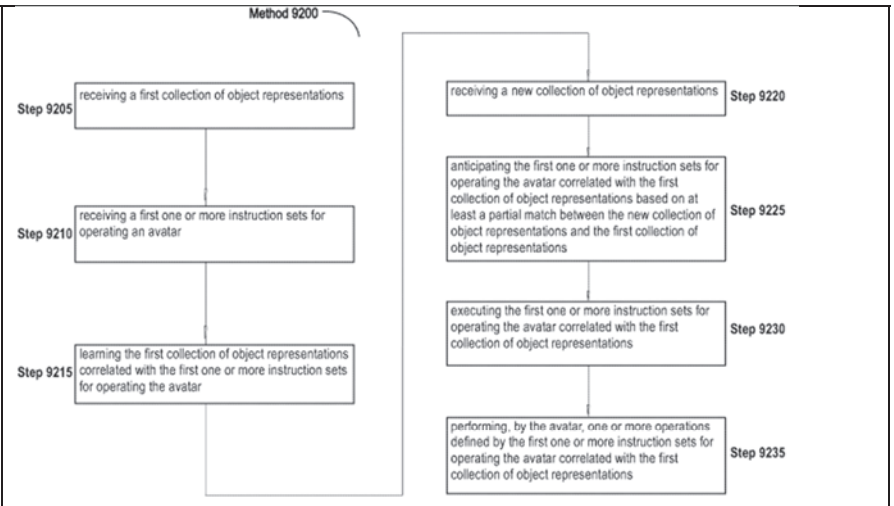


FIG. 31

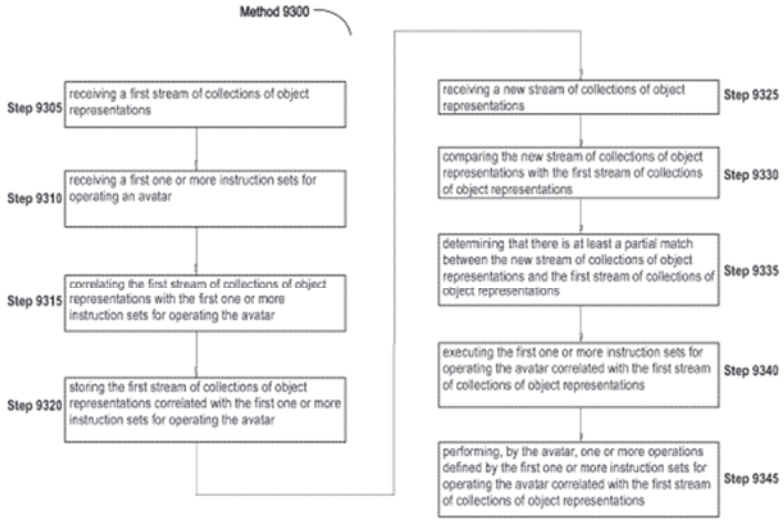


FIG. 32

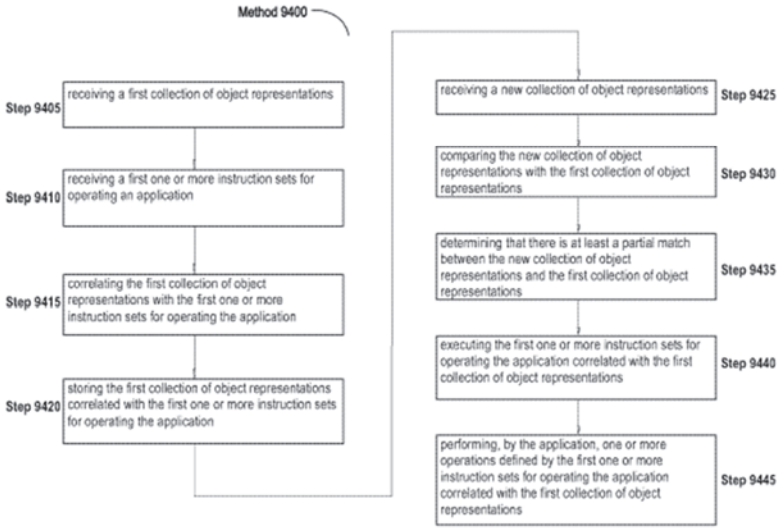


FIG. 33

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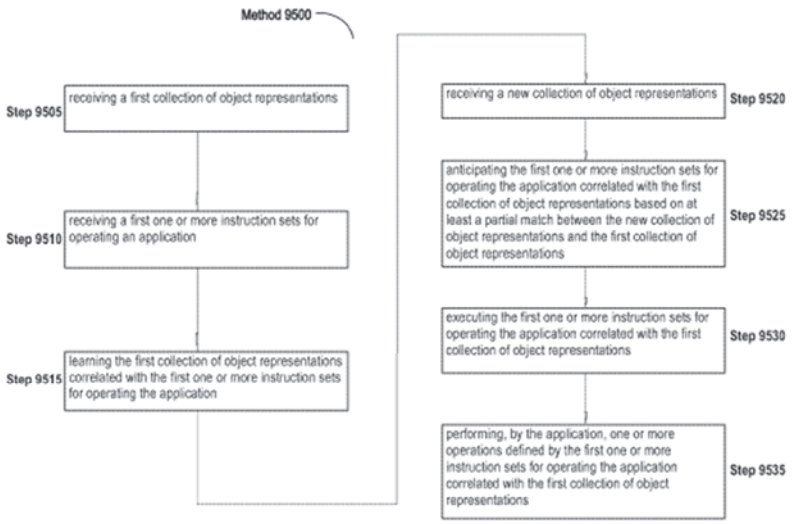


FIG. 34

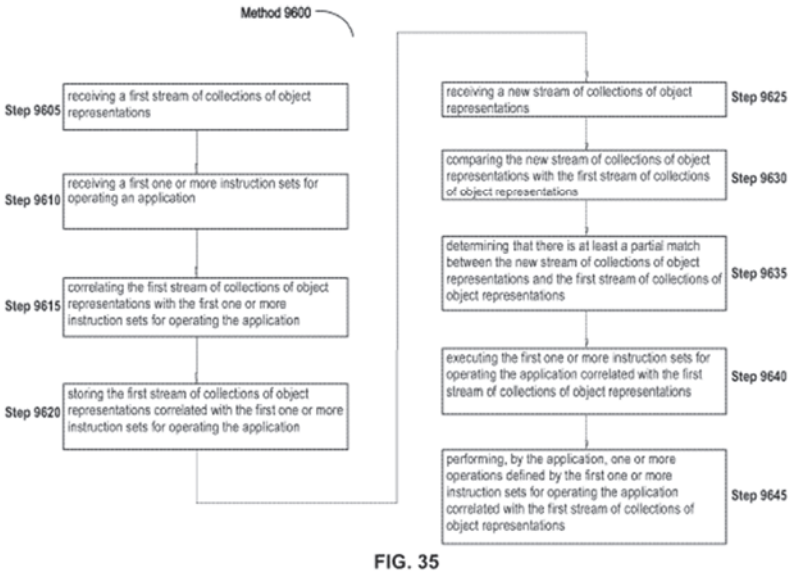
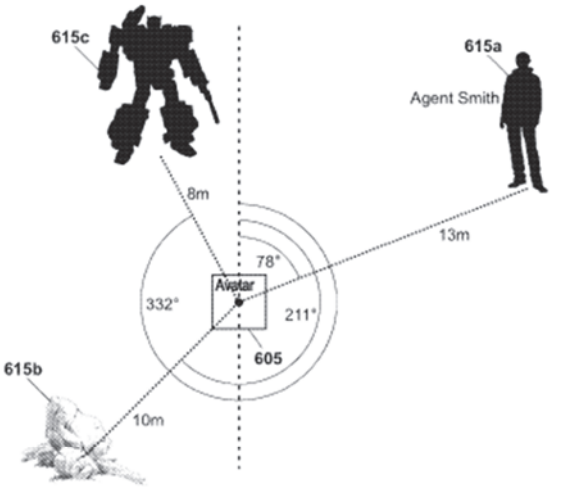
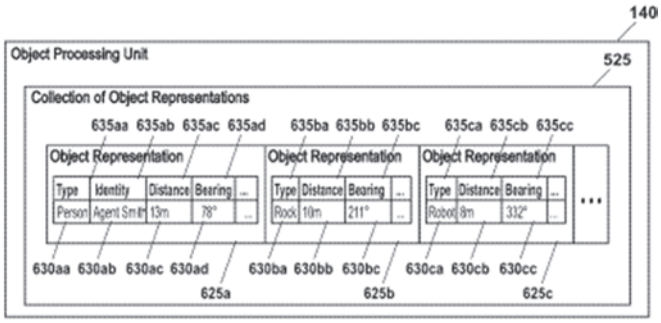


FIG. 35

’743 Application at [Figs. 31-35].

	 FIG. 5A  FIG. 5B ’743 Application at [Figs. 5A-5B]. As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. ’743 Application at [73:27-29].
obtaining or receiving the first one or more instruction sets for operating the first avatar of the application;	The ’743 Application supports “and obtaining or receiving the first one or more instruction sets for operating the first avatar of the application.” For example, the ’734 Application discloses:

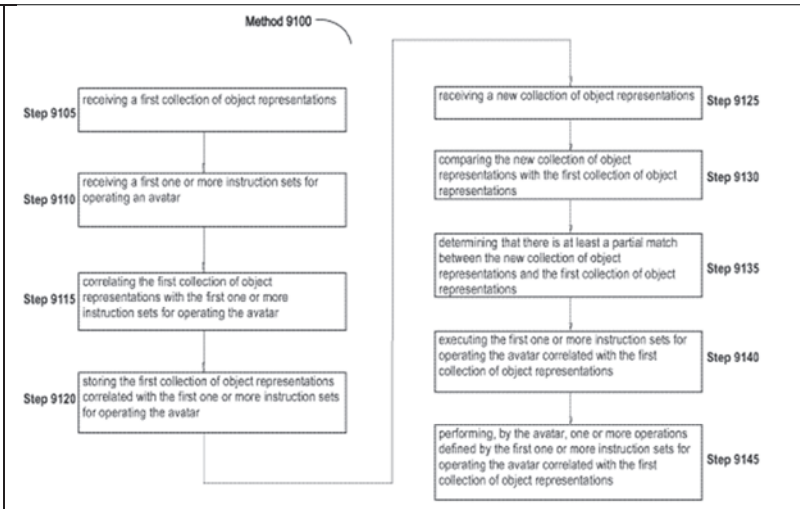


FIG. 30

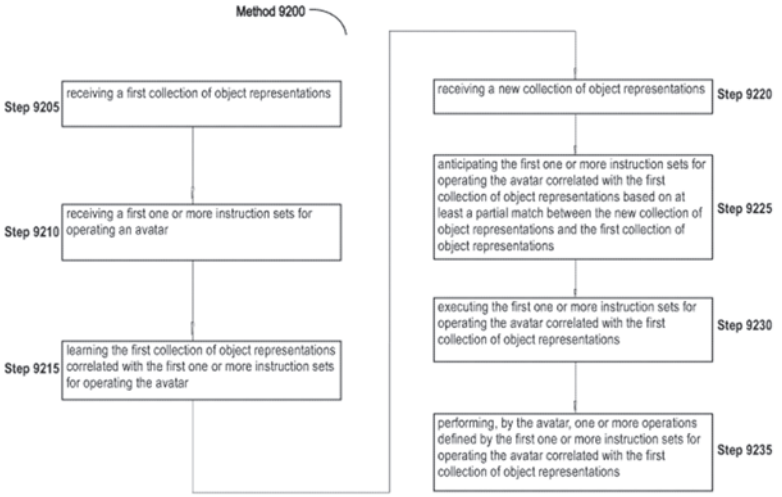


FIG. 31

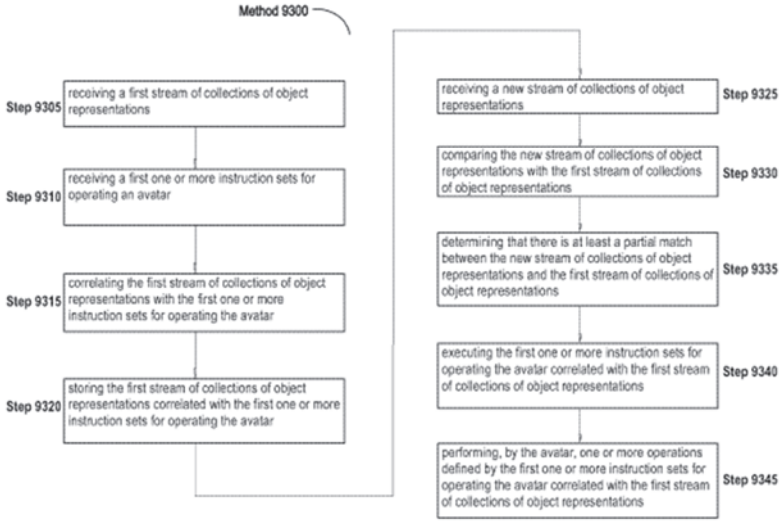
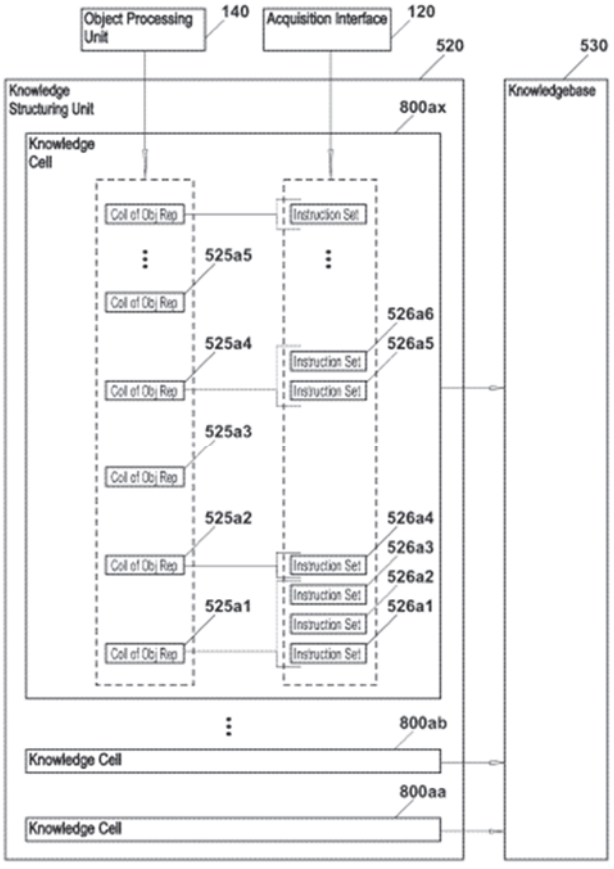


FIG. 32

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	’743 Application at [Figs. 30-32]. At step 9110, a first one or more instruction sets for operating an avatar are received. ’743 Application at [137:22-22]. The artificial intelligence unit may be further configured to: receive a first one or more instruction sets for operating an avatar of the application. ’743 Application at [1:29-30].  FIG. 12

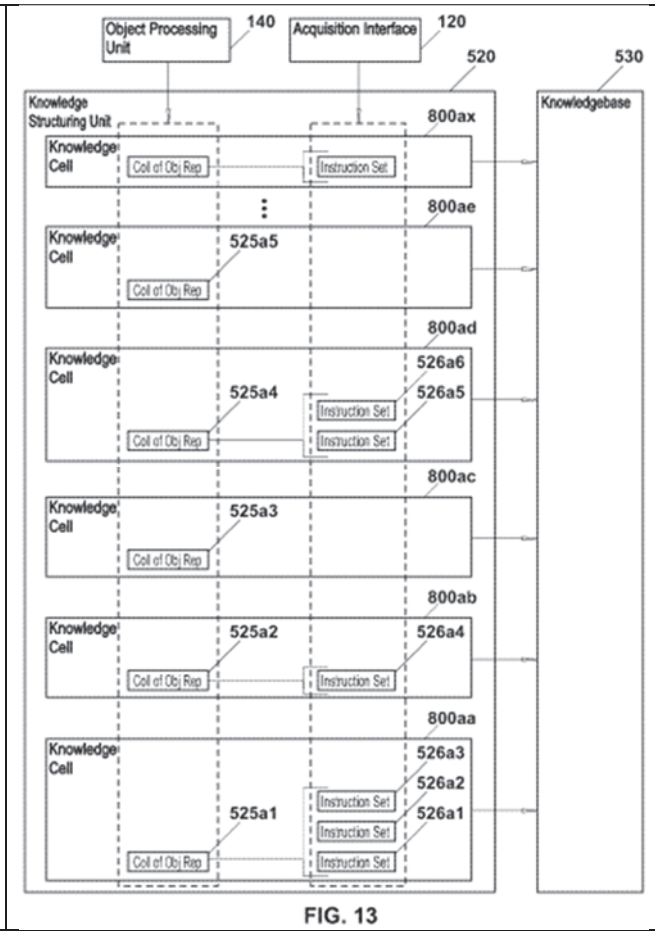


FIG. 13

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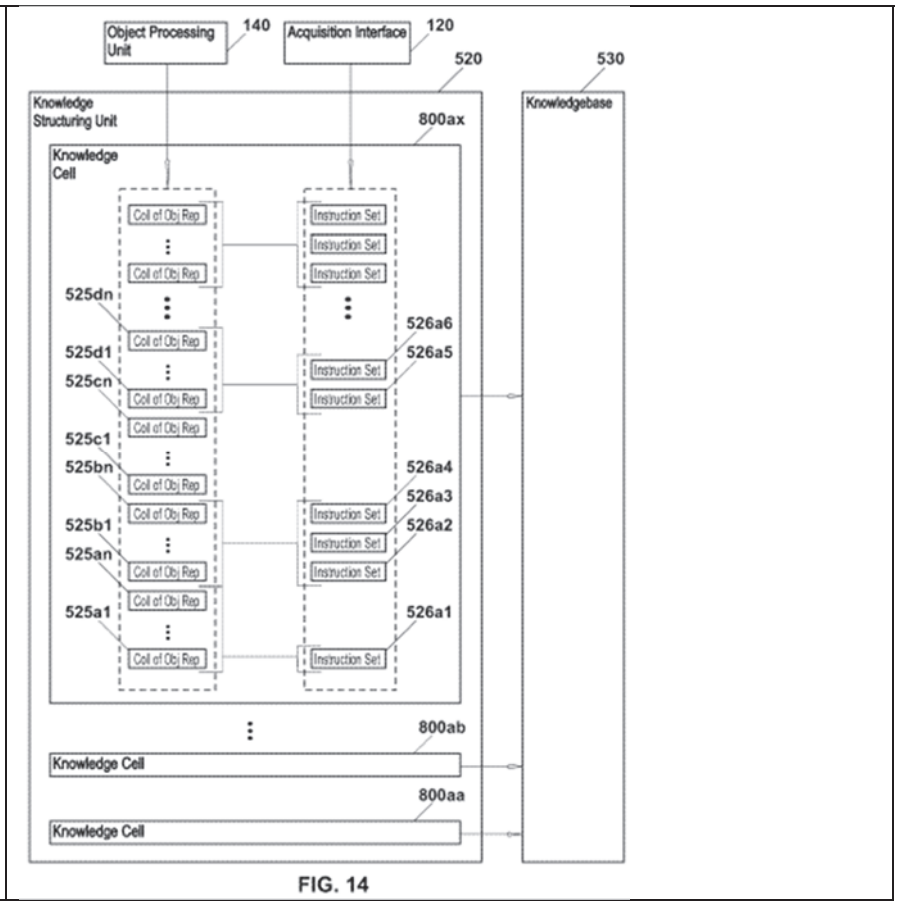


FIG. 14

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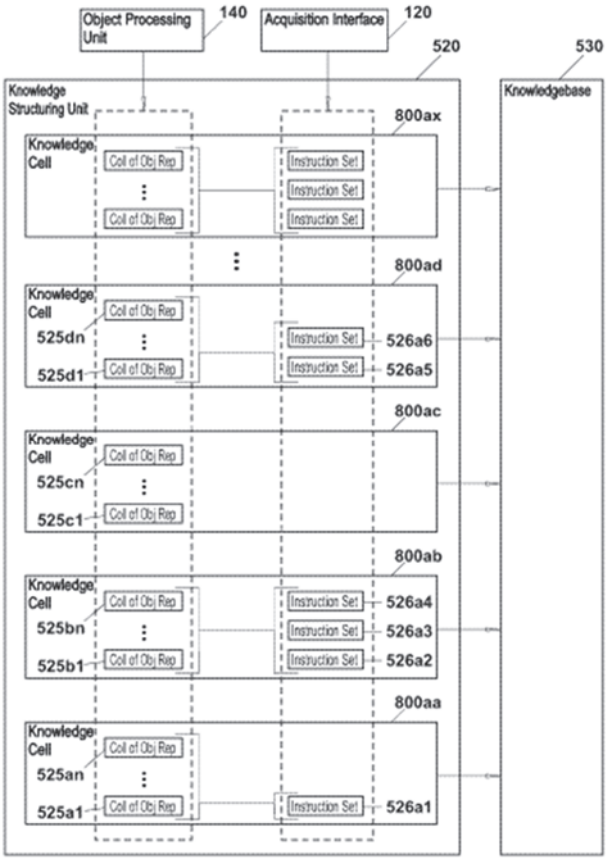


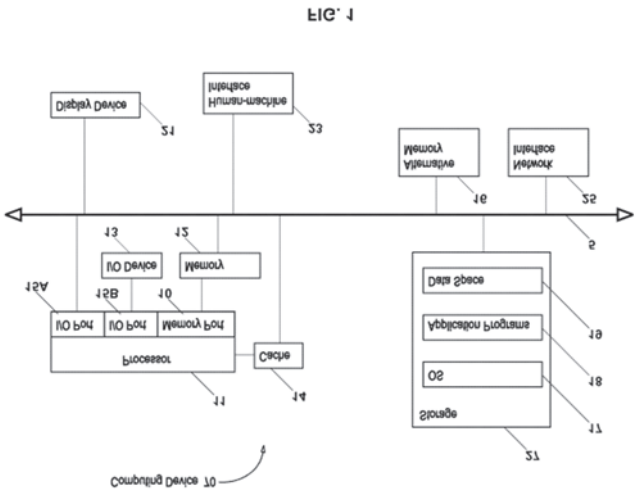
FIG. 15

’743 Application at [Figs. 12-15].

Knowledge Structuring Unit 520 may also receive one or more instruction Sets 526 from Acquisition Interface 120. Knowledge Structuring Unit 520 may further receive any Extra Info 527.

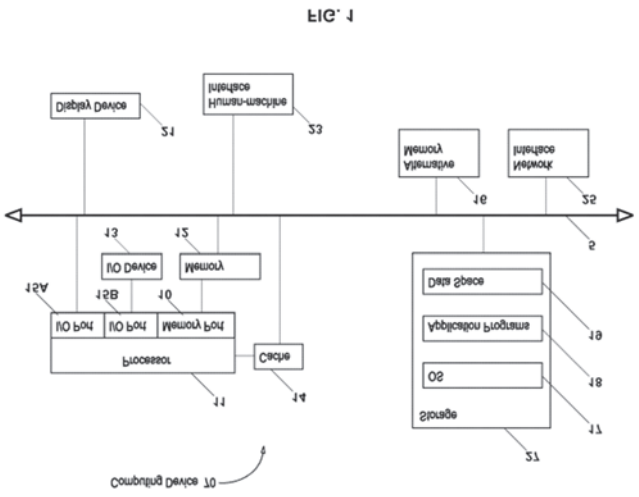
’743 Application at [90:32-33].

Referring now to Acquisition Interface 120, Acquisition Interface 120 comprises the functionality for obtaining and/or receiving instruction sets, data, and/or other information. Acquisition Interface 120 comprises the functionality for obtaining and/or receiving instruction sets, data, and/or other information related to the operation of Avatar 605, Application Program 18, Processor 11, and/or other processing element.

	’743 Application at [77:1-4].
Support for Limitations Unique to Substitute Claim 34 (which is based on Original Claim 10)	
A method implemented using a computing system that includes one or more processors, the method comprising:	The ’743 Application supports “A method implemented using a computing system that includes one or more processors, the method comprising:.” For example, the ’734 Application discloses: Artificially Intelligent Systems, Devices, and Methods for Learning and/or Using an Avatar’s Circumstances for Autonomous Avatar Operation ’743 Application at [Title]. Aspects of the disclosure generally relate to computing devices and/or systems, and may be generally directed to devices, systems, methods, and/or applications for learning an avatar’s or an application’s operation in various circumstances, storing this knowledge in a knowledgebase (i.e. neural network, graph, sequences, etc.), and/or enabling autonomous operation of the avatar or the application. ’743 Application at [Abstract].  ’743 Application at [Fig. 1].

	In some embodiments, the system comprises: a processor circuit configured to execute instruction sets of an application. '743 Application at [1:25-26]. Processor 11 includes one or more circuits or devices that can execute instructions fetched from memory 12 and/or other element Processor 11 may include any combination of hardware and/or processing techniques or capabilities for executing or implementing logic functions or programs. Processor 11 may include a single core or a multi core processor. Processor 11 includes the functionality for loading operating system 17 and operating any application programs 18 thereon. In some embodiments, Processor 11 can be provided in a microprocessing or a processing unit, such as, for example, Snapdragon processor produced by Qualcomm Inc., processor by Intel Corporation of Mountain View, California, processor manufactured by Motorola Corporation of Schaumburg, Ill.; processor manufactured by Transmeta Corporation of Santa Clara, Calif.; processor manufactured by International Business Machines of White Plains, N.Y., processor manufactured by Advanced Micro Devices of Sunnyvale, California, or any computing circuit or device for performing similar functions. In other embodiments, processor 11 can be provided in a graphics processing unit (GPU), visual processing unit (VPU), or other highly parallel processing circuit or device such as, for example, nVidia GeForce line of GPUs, AMD Radeon line of GPUs, and/or others. Such GPUs or other highly parallel processing circuits or devices may provide superior performance in processing operations on neural networks, graphs, and/or other data structures. In further embodiments, processor 11 can be provided in a micro controller such as, for example, Texas instruments, Atmel, Microchip Technology, ARM, Silicon Labs, Intel, and/or other lines of micro controllers. In further embodiments, processor 11 can be provided in a

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	quantum processor such as, for example, D-Wave Systems, Microsoft, Intel, IBM, Google, Toshiba, and/or other lines of quantum processors. In further embodiments, processor 11 can be provided in a biocomputer such as DNA-based computer, protein-based computer, molecule-based computer, and/or others. In further embodiments, processor 11 includes any circuit or device for performing logic operations. Processor 11 can be based on any of the aforementioned or other available processors capable of operating as described herein. Computing Device 70 may include one or more of the aforementioned or other processors. In some designs, processor 11 can communicate with memory 12 via a system bus 5. In other designs, processor 11 can communicate directly with memory 12 via a memory port 10. '743 Application at [53:15-38].
accessing a memory that stores at least a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application,	The '743 Application supports "accessing a memory that stores at least a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an application." For example, the '734 Application discloses:  '743 Application at [Fig. 1].

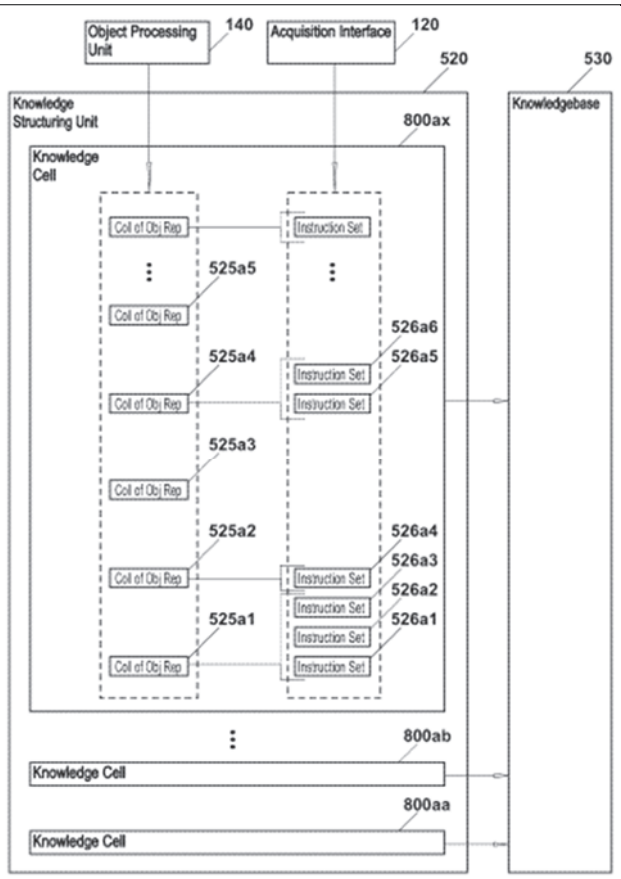
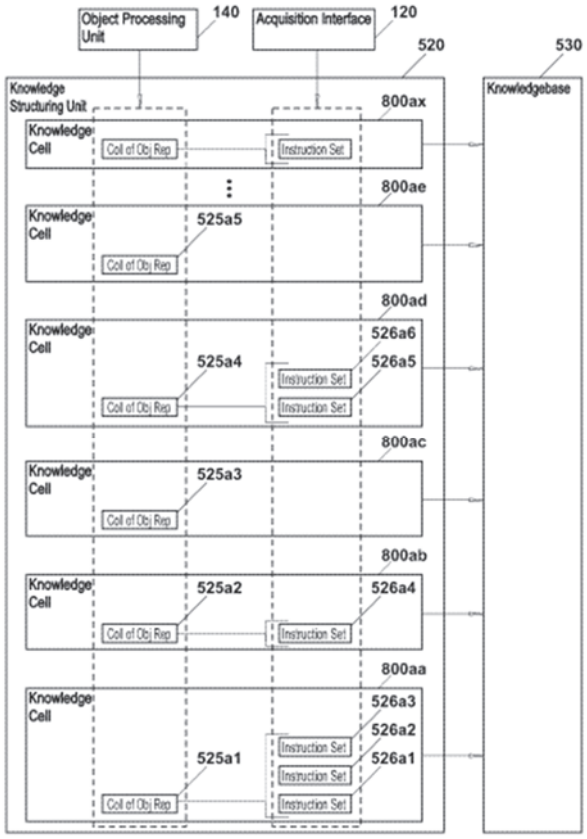


FIG. 12

’743 Application at [Fig. 12].

For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure

	within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].  FIG. 13

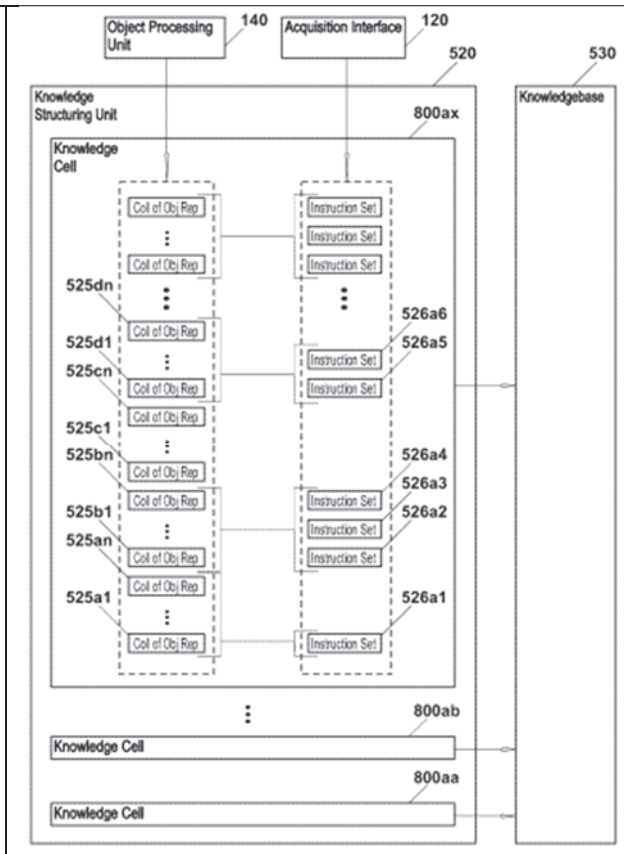


FIG. 14

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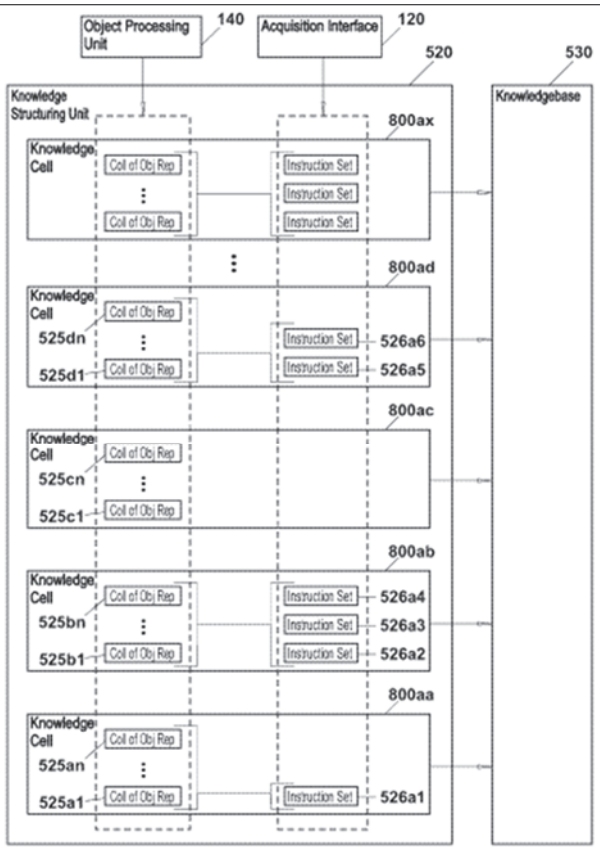


FIG. 15

’743 Application at [Figs. 13-15].

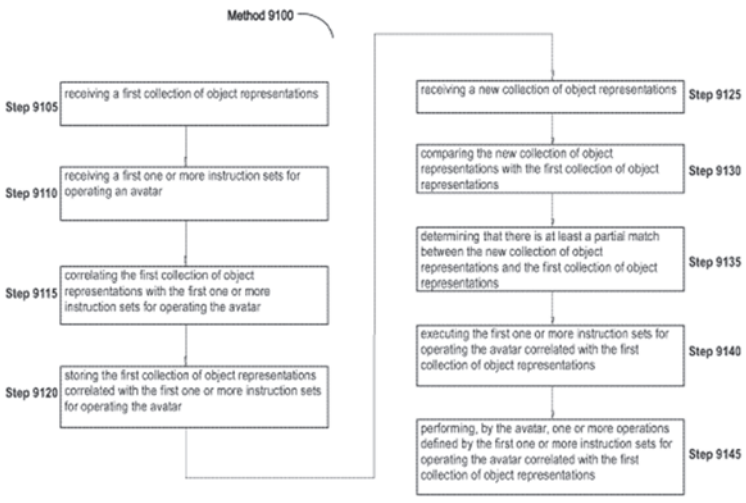
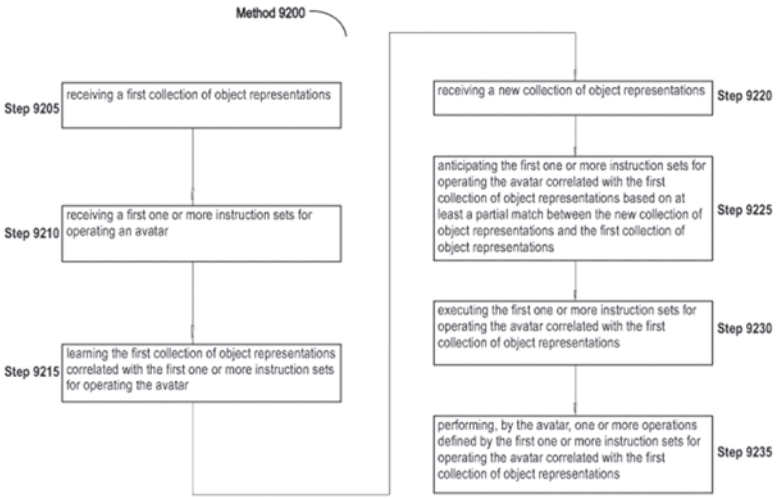
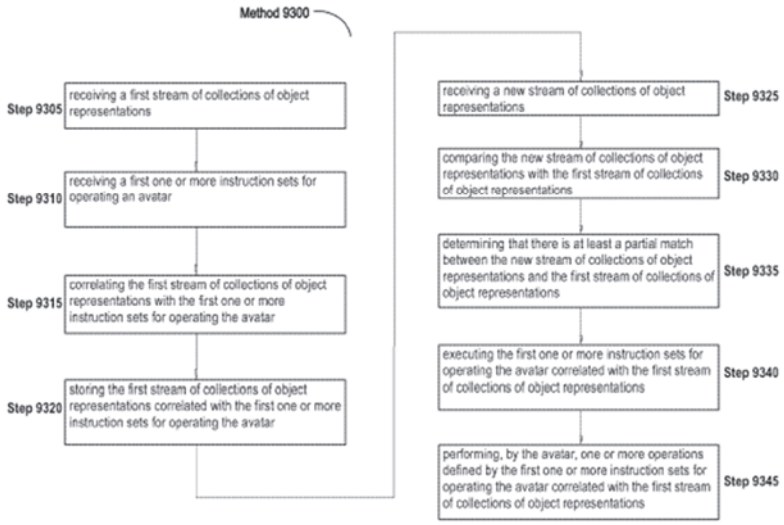


FIG. 30

’743 Application at [Fig. 30].

	At step 9120, the first collection of object representations correlated with the first one or more instruction sets for operating the avatar are stored. ’743 Application at [139:12-13].  FIG. 31  FIG. 32

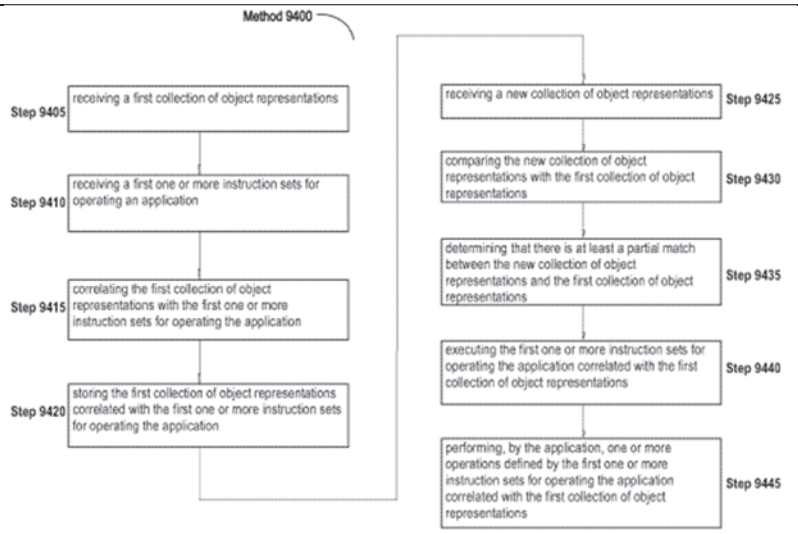


FIG. 33

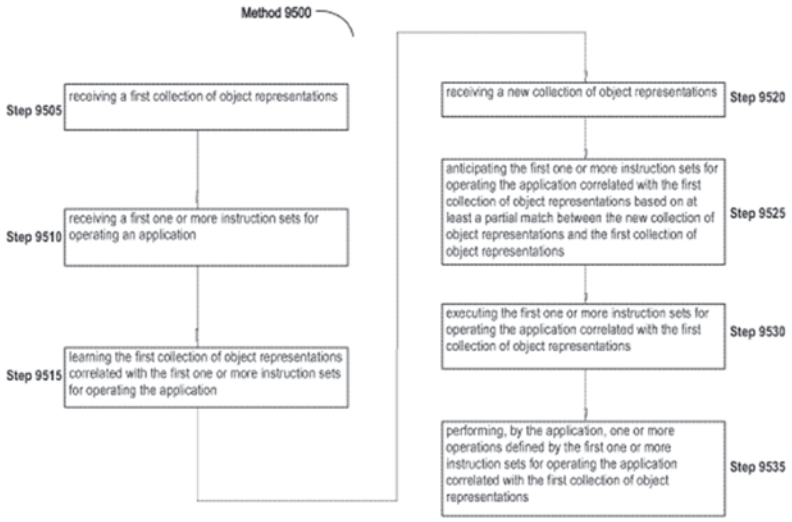


FIG. 34

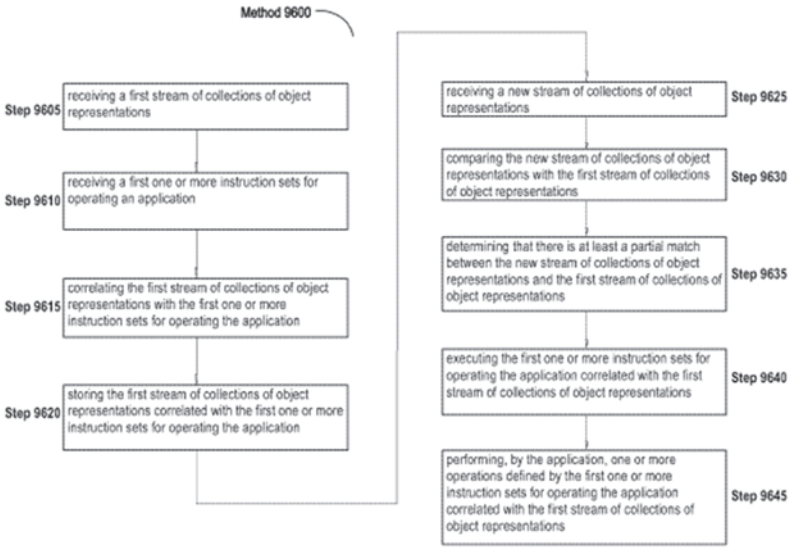
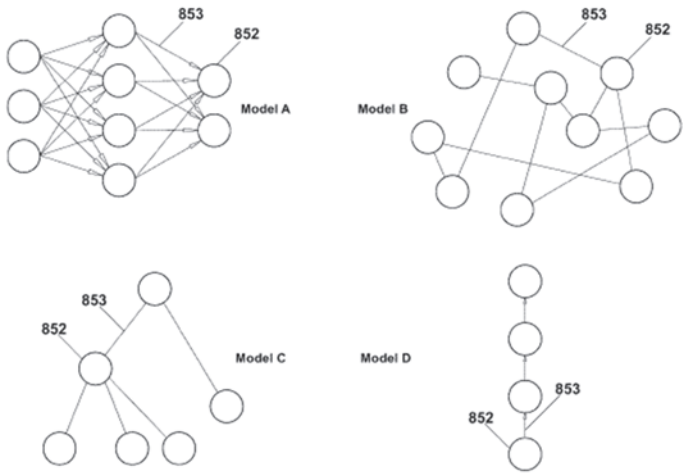
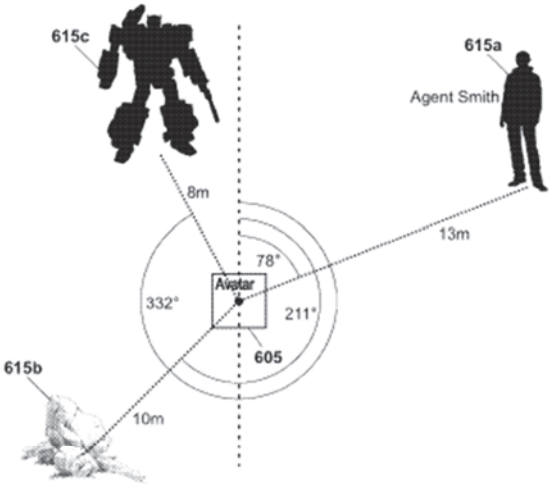
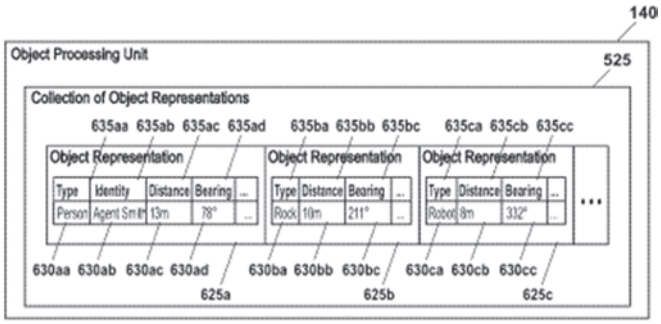


FIG. 35

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	’743 Application at [Figs. 31-35].  FIG. 16 ’743 Application at [Fig. 16].
wherein the first one or more object representations represent one or more objects of the application;	The ’743 Application supports “wherein the first one or more object representations represent one or more objects of the application.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar’s 605 surrounding within Application Program

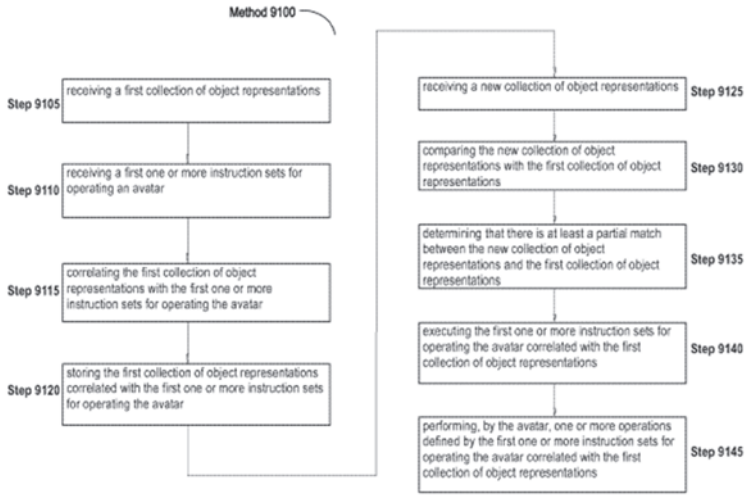
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	18. ’743 Application at [62:14-22].  FIG. 5A  FIG. 5B ’743 Application at [Figs. 5A-5B]. As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. ’743 Application at [73:27-29]. At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may

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	include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or information. In some designs, an object representation includes a representation of an object (i.e. Object 615, etc.) in an avatar's (i.e. Avatar's 605, etc.) surrounding within an application (i.e. Application Program 18, etc.). In other designs, an object representation includes a representation of an object of an application. '743 Application at [135:29-34]. The artificial intelligence unit may be configured to: receive a first collection of object representations, the first collection of object representations including one or more object representations representing one or more objects of the application. '743 Application at [1:27-29].
generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;	The '743 Application supports "generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application." For example, the '734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs,

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	Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar's 605 surrounding within Application Program 18. '743 Application at [62:14-22]. ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier's 605a surrounding. '743 Application at [147:33-35]. In the future, ACAAO Unit 110 may compare incoming Collections of Object Representations 525 representing Objects 615 in Soldier's 605a surrounding with previously learned Collections of Object Representations 525 including optionally using any Extra Info 527 for enhanced decision making. '743 Application at [148:5-8].  FIG. 30 '743 Application at [Fig. 30].

At step 9125, a new collection of object representations is received.

’743 Application at [140:3-3].

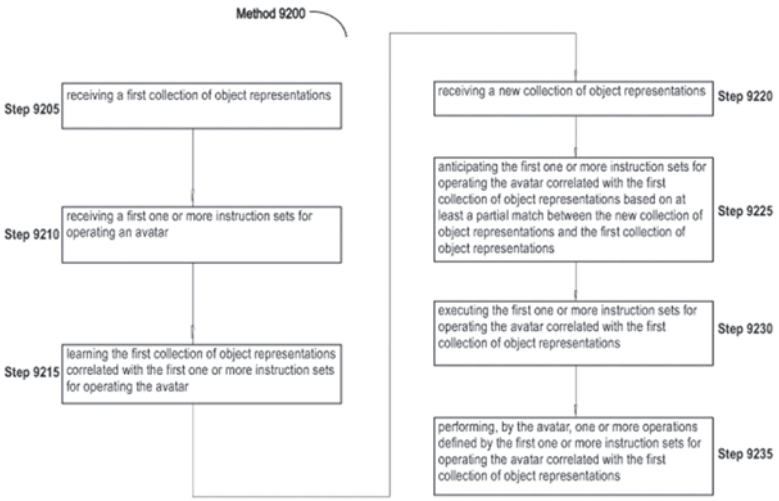


FIG. 31

’743 Application at [Fig. 31].

At step 9220, a new collection of object representations is received.

’743 Application at [144:4-4].

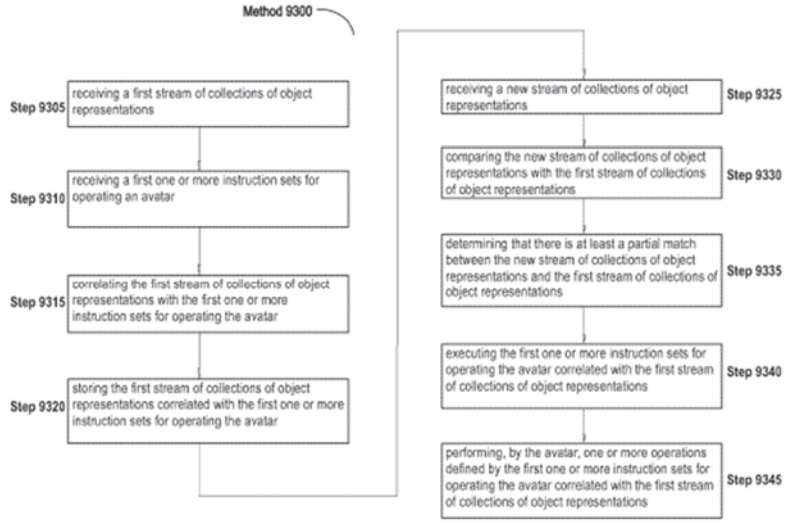


FIG. 32

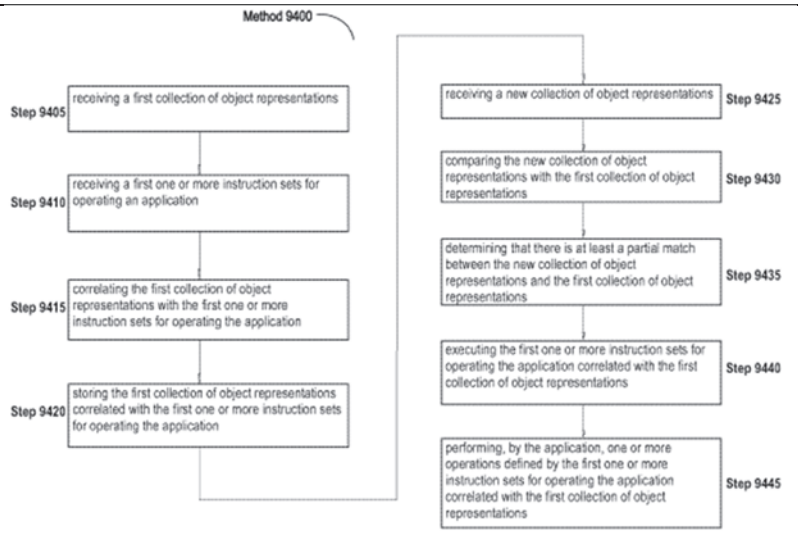


FIG. 33

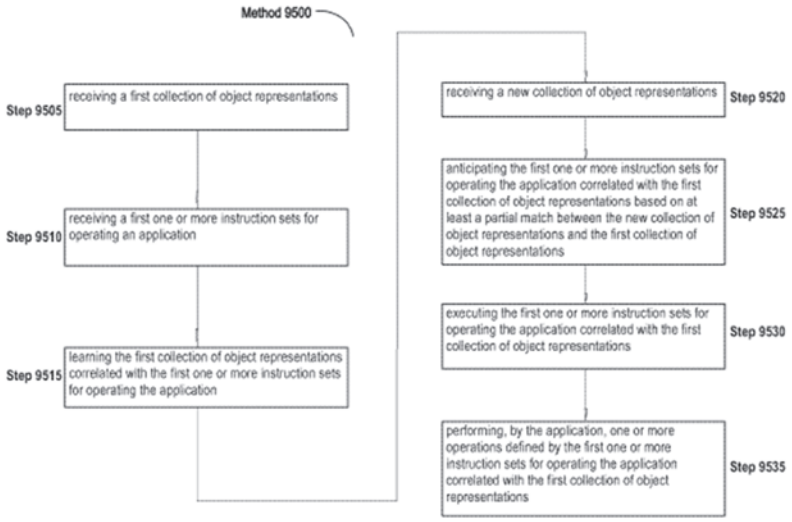


FIG. 34

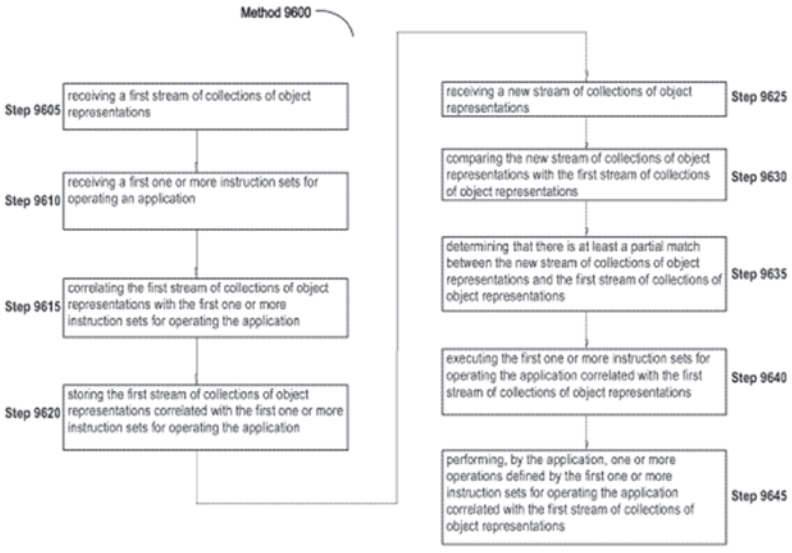
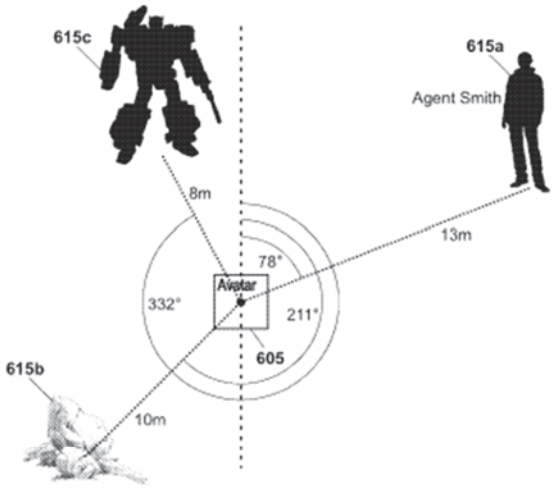
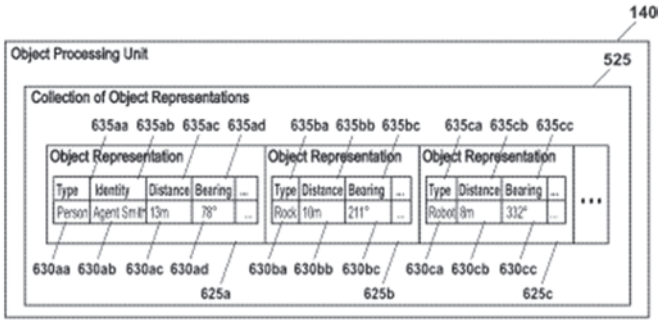
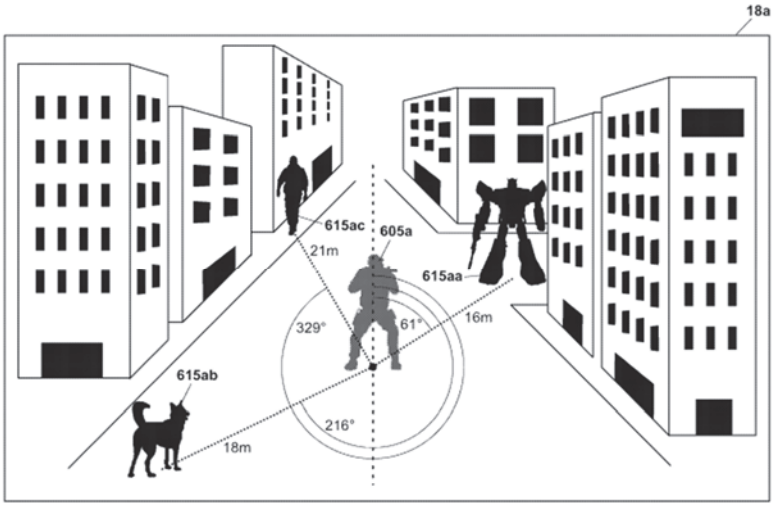


FIG. 35

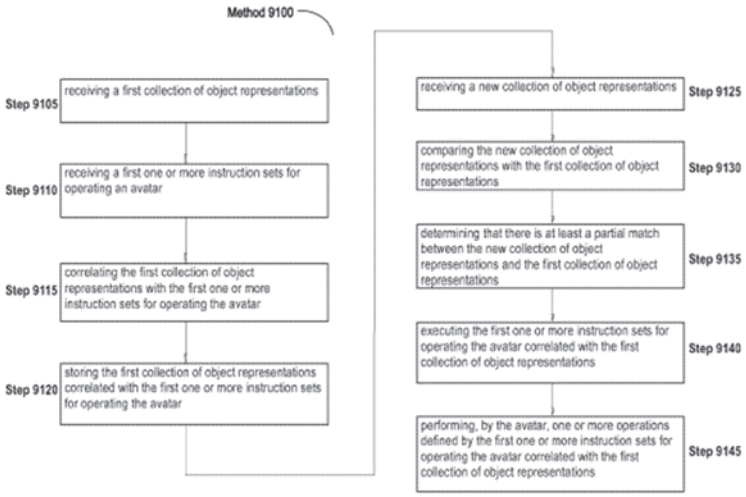
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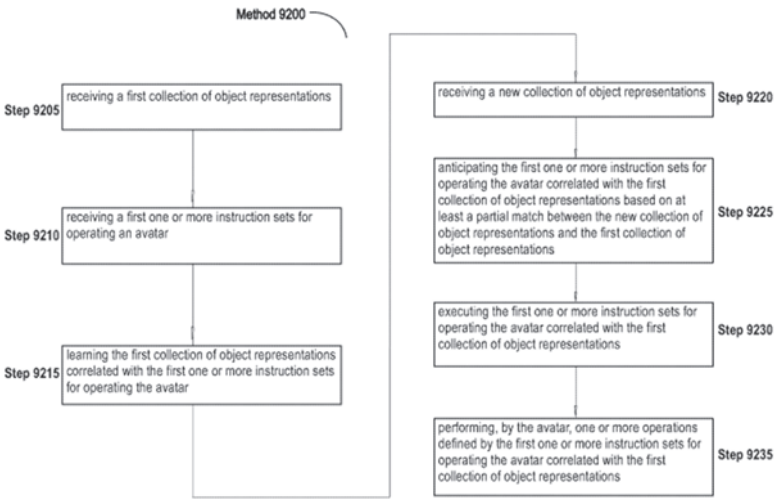
	’743 Application at [Figs. 32-35].  FIG. 5A  FIG. 5B ’743 Application at [Figs. 5A-5B]. As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. ’743 Application at [73:27-29].
determining the first one or more instruction sets for operating the first avatar of the	The ’743 Application supports “determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations.” For example,

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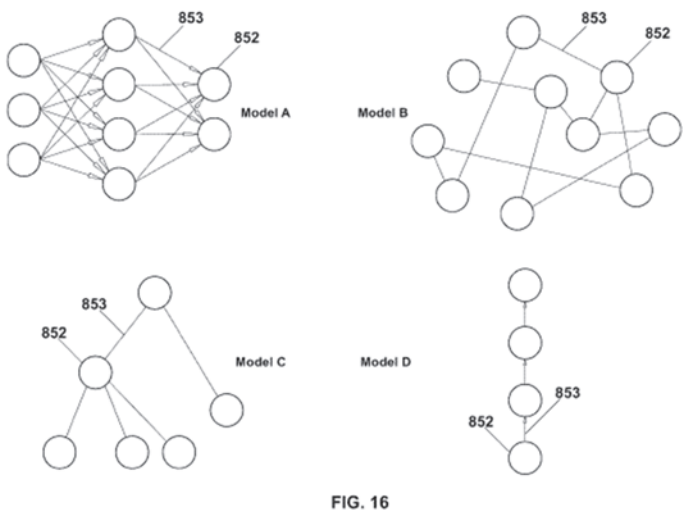
application based on at least partial match between the second one or more object representations and the first one or more object representations; and	the ’734 Application discloses:  FIG. 36 ’743 Application at [Fig. 36]. In the future, ACAAO Unit 110 may compare incoming Collections of Object Representations 525 representing Objects 615 in Soldier’s 605a surrounding with previously learned Collections of Object Representations 525 including optionally using any Extra Info 527 for enhanced decision making. If substantially similar or at least a partial match is found or determined, ACAAO Unit 110 may cause the Instruction Sets 526 correlated with the previously learned Collections of Object Representations 525 to be executed, thereby enabling autonomous operation of Soldier 605a in similar circumstances as in previously learned ones. For instance, ACAAO Unit 100 may learn User SO-directed shooting at Opponent 615aa by Soldier 605a in a circumstance that includes Opponent 615aa, Dog 615ab, Pedestrian 615ac, and/or other Objects 615 among which Soldier 605a may need to maneuver and/or with which Soldier 605a may need to interact, as shown. In the future, when a circumstance that includes one or more Objects 615 with similar Object Properties 630 is encountered, ACAAO Unit 100 may implement the shooting at Opponent 615aa by Soldier 605a

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	autonomously. ’743 Application at [148:5-16].  FIG. 30 ’743 Application at [Fig. 30]. At step 9135, a determination is made that there is at least a partial match between the new collection of object representations and the first collection of object representations. ’743 Application at [140:33-34]. Decision-making Unit 540 comprises the functionality for anticipating or determining Avatar’s 605 operation in circumstances including objects with various properties. Decision-making Unit 540 comprises the functionality for anticipating or determining Instruction Sets 526 to be used or executed in Avatar’s 605 autonomous operation. ’743 Application at [114:31-34]. In some aspects, Decision-making Unit 540 may anticipate or determine Instruction Sets 526 (i.e. anticipatory Instruction Sets 526, etc.) for autonomous Avatar 605 operation by performing Similarity

	Comparisons 125 of incoming Collections of Object Representations 525 or portions thereof from Object Processing Unit 140 with Collections of Object Representations 525 or portions thereof from Knowledge Cells 800 in Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). '743 Application at [114:38-115:4]. Similarity Comparison 125 may include functions, rules, and/or logic for performing matching or comparisons and for determining that while a perfect match is not found, a partial or similar match has been found. '743 Application at [100:34-36]. Similarity Comparison 125 enables comparing circumstances including objects with various properties and determining their similarity or match. '743 Application at [101:12-13].  FIG. 31 '743 Application at [Fig. 31].

	At step 9225, the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are anticipated based on at least a partial match between the new collection of object representations and the first collection of object representations. Step 9225 may include any action or operation described in Step 9130 and/or Step 9135 of method 9100 as applicable. ’743 Application at [144:6-9]. Artificial Intelligence Unit 110 comprises the functionality for anticipating one or more instruction sets, data, and/or other information. Artificial intelligence Unit 110 comprises the functionality for anticipating one or more Instruction Sets 526 (i.e. anticipatory Instruction Sets 526, etc.) based on one or more incoming Collections of Object Representations 525 representing Objects 615 in Avatar’s 605 surrounding. The one or more Instruction Sets 526 (i.e. anticipatory Instruction Sets 526, etc.) may be used or executed in Avatar’s 605 autonomous operation. ’743 Application at [88:35-39]. The artificial intelligence unit may be further configured to: anticipate the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations based on at least a partial match between the new collection of object representations and the first collection of object representations. ’743 Application at [1:34-37].

	 FIG. 16 ’743 Application at [Fig. 16].
at least in response to the determining, executing the first one or more instruction sets for operating the first avatar of the application, wherein the first avatar of the application or a second avatar of the application performs one or more operations defined by the first one or more instruction sets for operating the first avatar of the application;	The ’743 Application supports “at least in response to the determining, executing the first one or more instruction sets for operating the first avatar of the application, wherein the first avatar of the application or a second avatar of the application performs one or more operations defined by the first one or more instruction sets for operating the first avatar of the application.” For example, the ’734 Application discloses: The artificial intelligence unit may be further configured to: cause the processor circuit to execute the fast one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations, the causing performed in response to the anticipating of the artificial intelligence unit, wherein the avatar of the application performs one or more operations denned by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations. ’743 Application at [1:37-2:3]. The method may further comprise: (f) executing the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations, the executing of (f) performed in

response to the anticipating of (e). The method may further comprise: (g) performing, by the avatar of the application, one or more operations defined by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations.

’743 Application at [16:25-29].

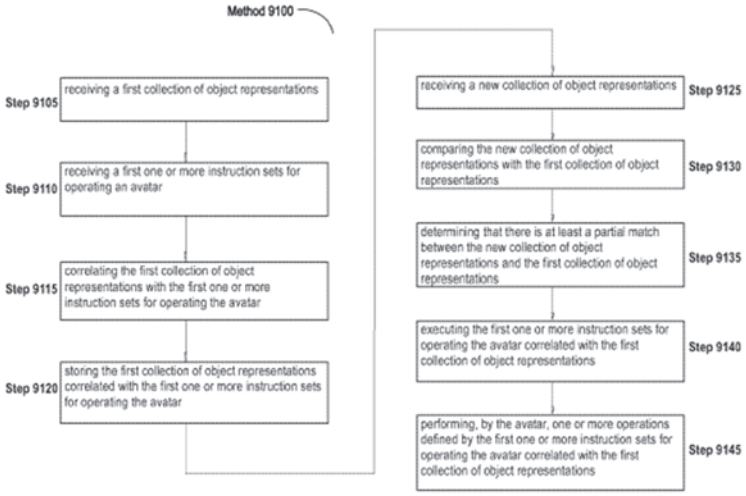


FIG. 30

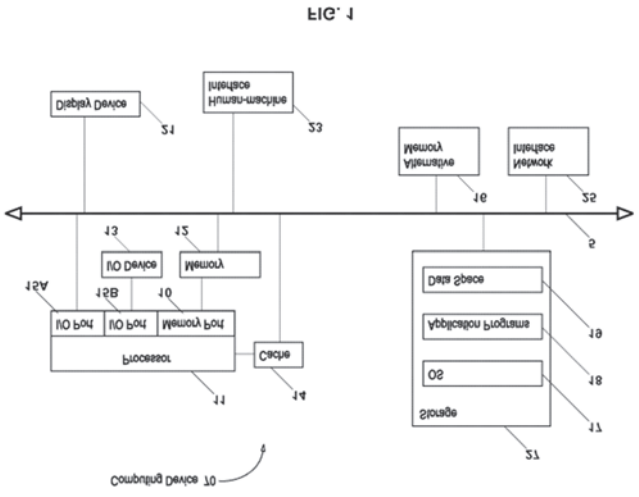
’743 Application at [Fig. 30].

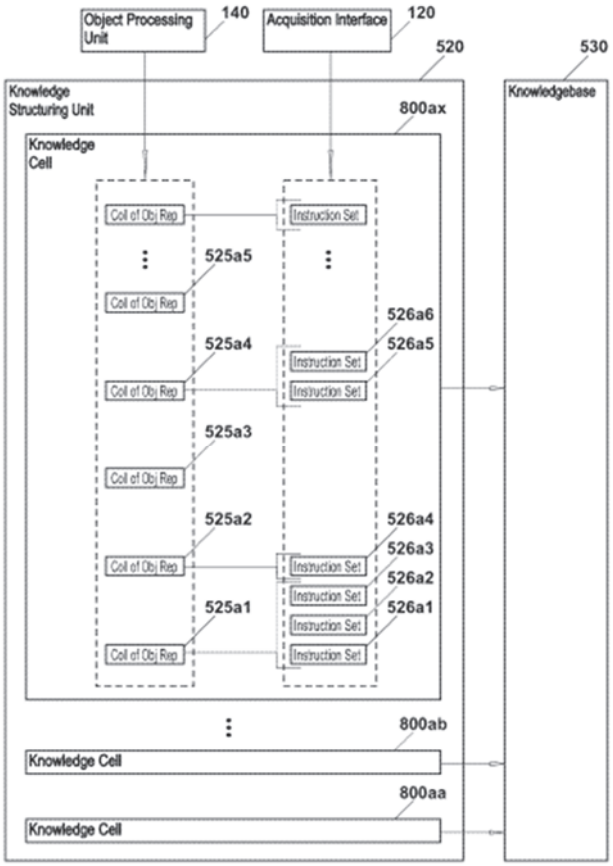
At step 9140, the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are executed. An instruction set can be executed by a processor and/or other processing element Executing can be performed in response to the aforementioned determining.

’743 Application at [142:10-12].

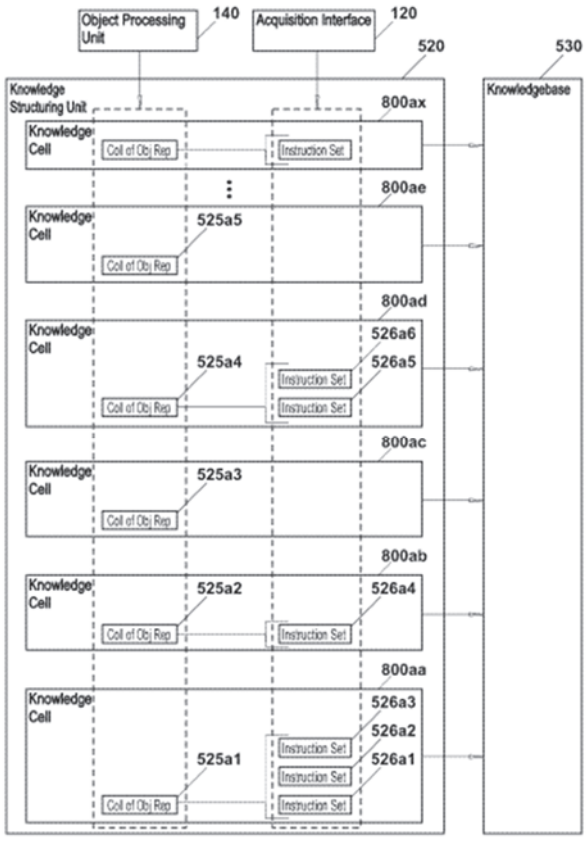
At step 9145, one or more operations defined by the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are performed by the avatar.

’743 Application at [143:17-18].

Support for Limitations Unique to Substitute Claim 35 (which is based on Original Claim 19)	
A system comprising:	The ’743 Application supports “A system comprising:.” For example, the ’734 Application discloses: Artificially Intelligent Systems, Devices, and Methods for Learning and/or Using an Avatar’s Circumstances for Autonomous Avatar Operation ’743 Application at [Title]. Aspects of the disclosure generally relate to computing devices and/or systems, and may be generally directed to devices, systems, methods, and/or applications for learning an avatar’s or an application’s operation in various circumstances, storing this knowledge in a knowledgebase (i.e. neural network, graph, sequences, etc.), and/or enabling autonomous operation of the avatar or the application. ’743 Application at [Abstract].  ’743 Application at [Fig. 1].
a memory that stores at least a first correlation including a first one or more	The ’743 Application supports “a memory that stores at least a first correlation including a first one or more object representations correlated with a first one or more instruction sets for operating a first avatar of an

object representations correlated with a first one or more instruction sets for operating a first avatar of an application,	application." For example, the '734 Application discloses:  FIG. 12 '743 Application at [Fig. 12]. For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it Collection of Object Representations 525a1 correlated with Instruction Sets 526a1-526a3 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a2 correlated with Instruction Set 526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a3 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may further structure

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	within Knowledge Cell 800ax a Collection of Object Representations 525a4 correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a Collection of Object Representations 525a5 without a correlated Instruction Set 526 and/or Extra Info 527. Knowledge Structuring Unit 520 may structure within Knowledge Cell 800ax additional Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [91:1-13].  FIG. 13

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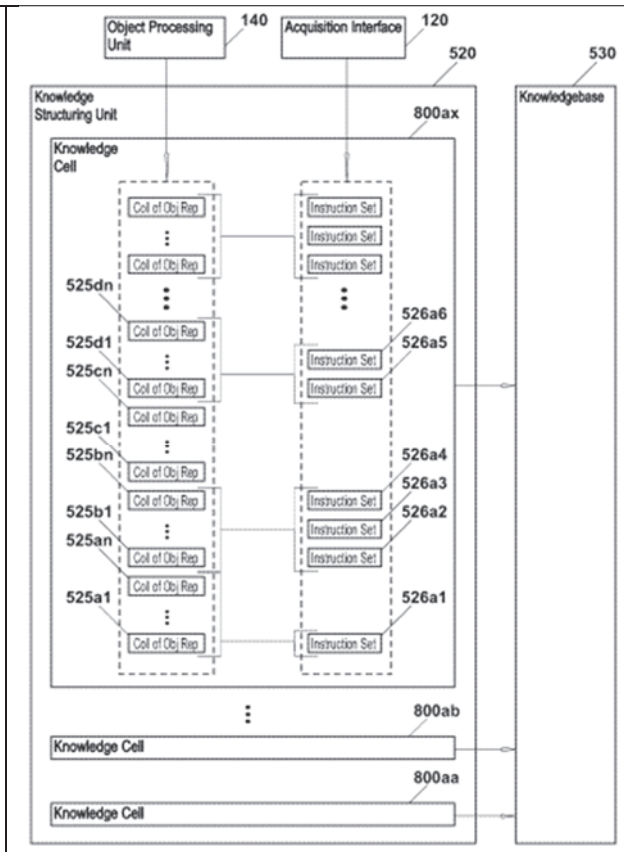


FIG. 14

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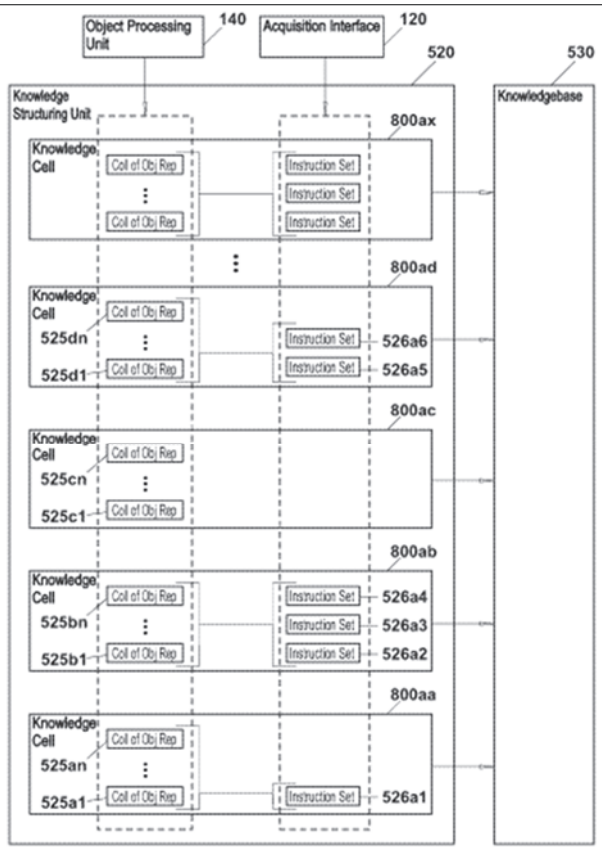


FIG. 15

’743 Application at [Figs. 13-15].

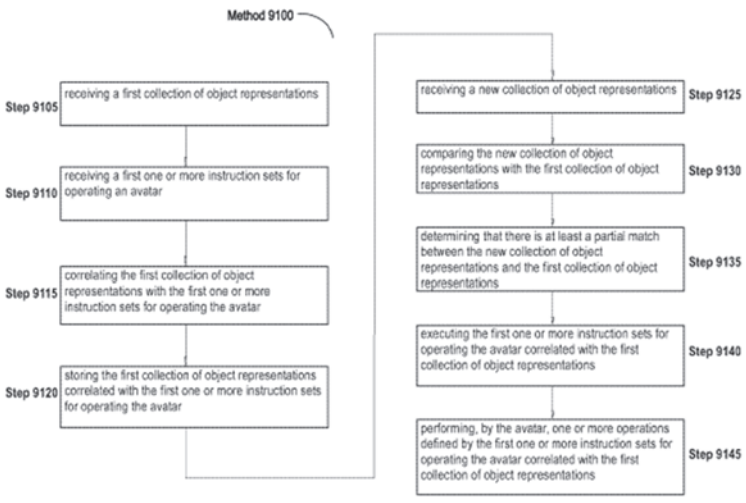
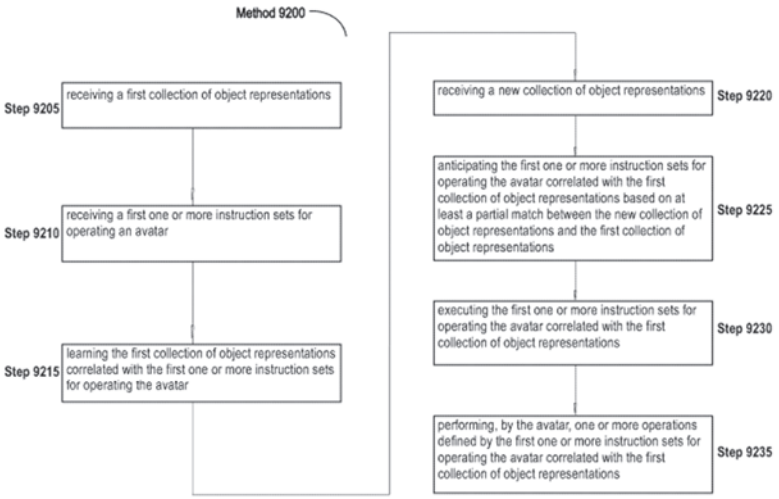
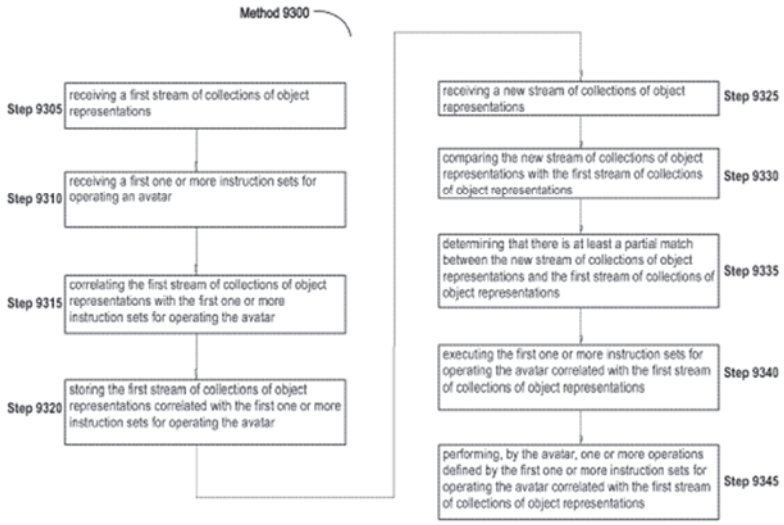


FIG. 30

’743 Application at [Fig. 30].

	At step 9120, the first collection of object representations correlated with the first one or more instruction sets for operating the avatar are stored. ’743 Application at [139:12-13].  FIG. 31  FIG. 32

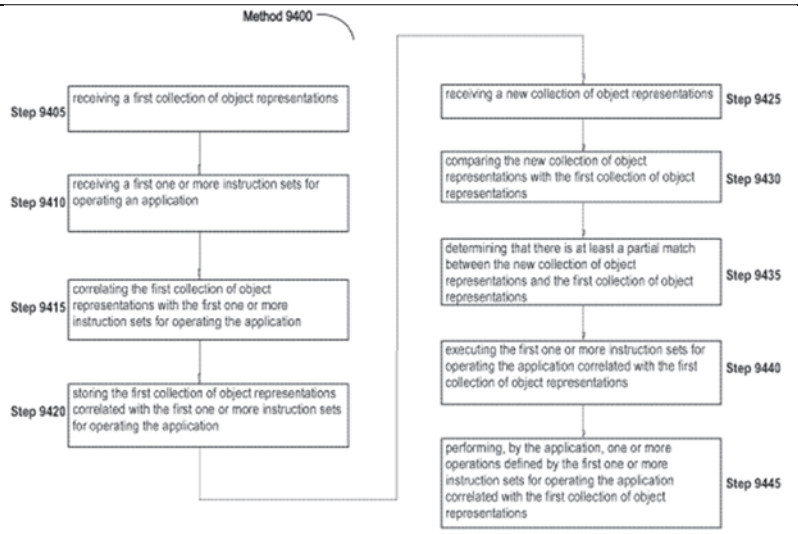


FIG. 33

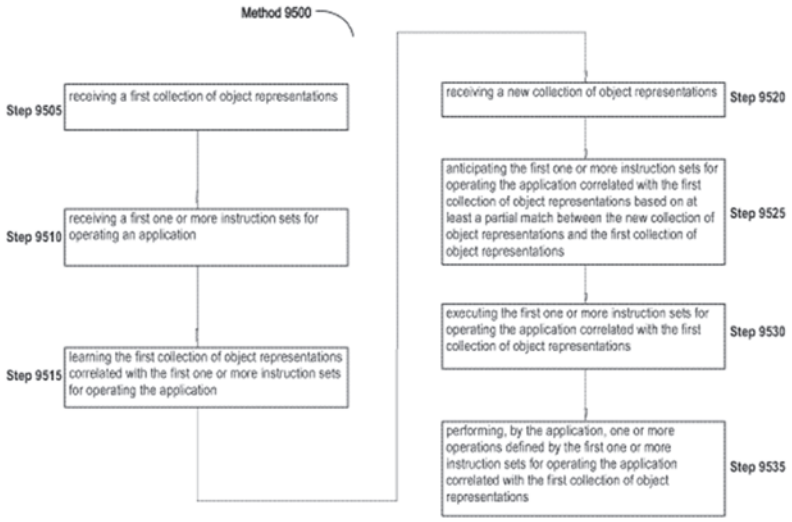


FIG. 34

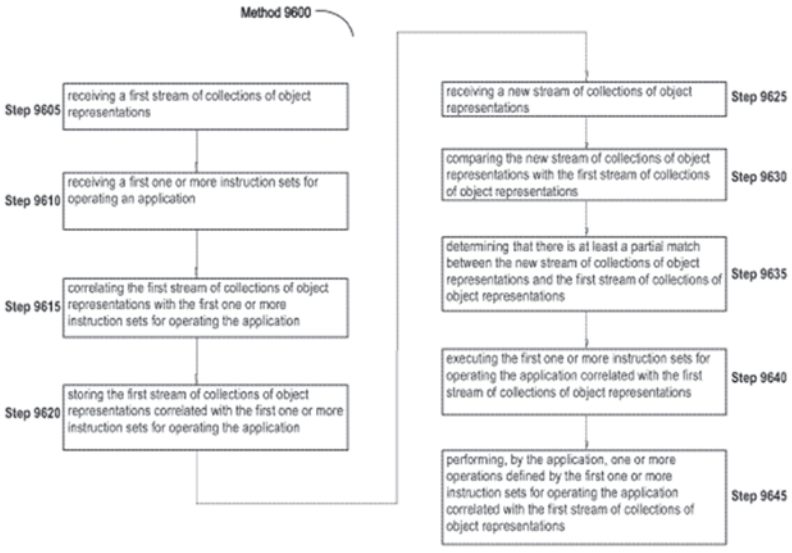
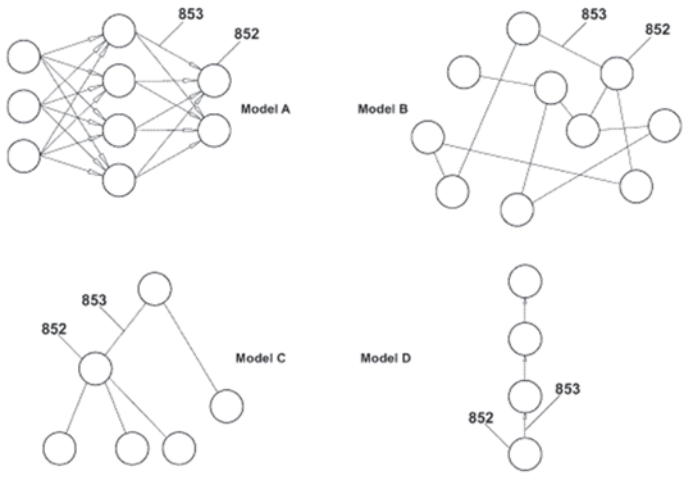
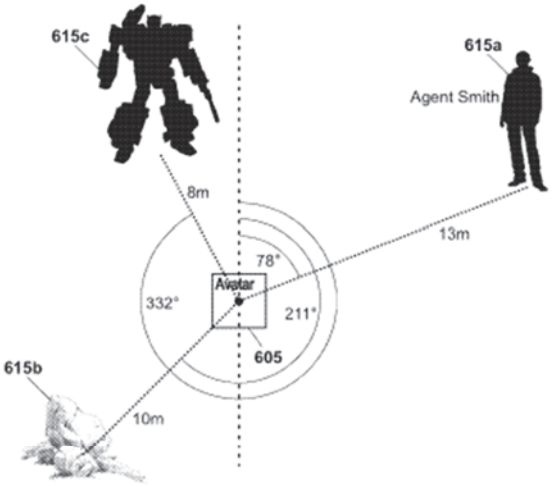
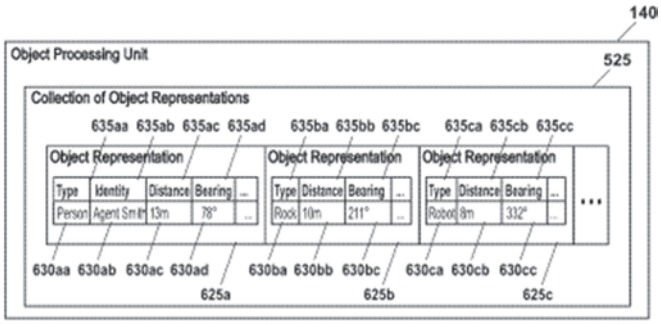


FIG. 35

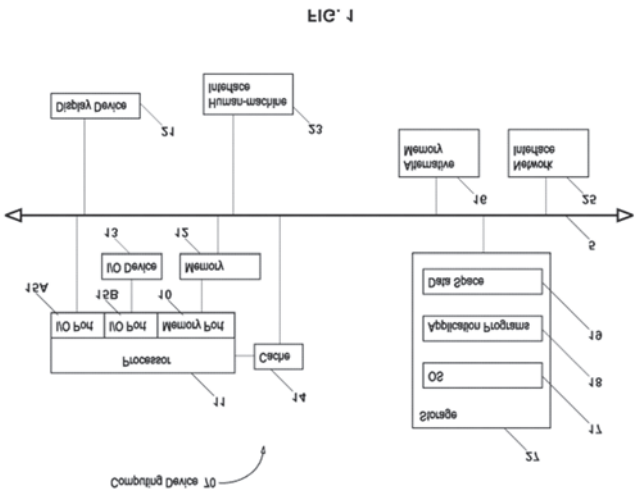
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	’743 Application at [Figs. 31-35].  FIG. 16 ’743 Application at [Fig. 16].
wherein the first one or more object representations represent one or more objects of the application;	The ’743 Application supports “wherein the first one or more object representations represent one or more objects of the application.” For example, the ’734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar’s 605 surrounding within Application Program

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	18. ’743 Application at [62:14-22].  FIG. 5A  FIG. 5B ’743 Application at [Figs. 5A-5B]. As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. ’743 Application at [73:27-29]. At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may

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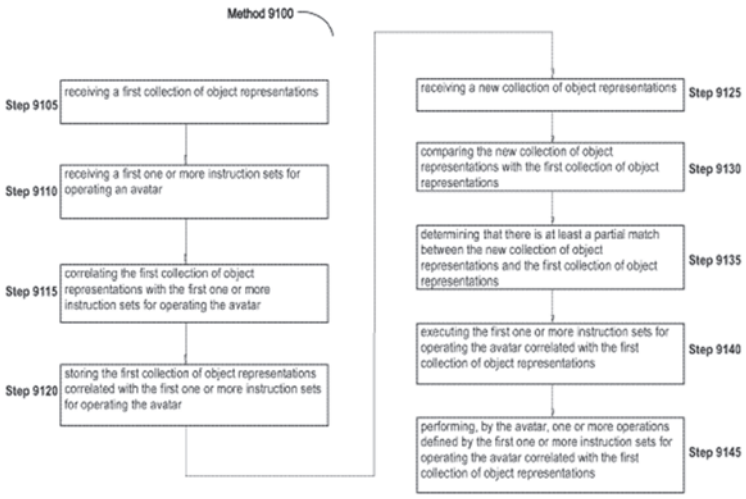
	include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or information. In some designs, an object representation includes a representation of an object (i.e. Object 615, etc.) in an avatar's (i.e. Avatar's 605, etc.) surrounding within an application (i.e. Application Program 18, etc.). In other designs, an object representation includes a representation of an object of an application. '743 Application at [135:29-34]. The artificial intelligence unit may be configured to: receive a first collection of object representations, the first collection of object representations including one or more object representations representing one or more objects of the application. '743 Application at [1:27-29].
means for generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application;	The '743 Application supports "means for generating or receiving a second one or more object representations, wherein the second one or more object representations represent one or more objects of the application." For example, the '734 Application discloses:  '743 Application at [Fig. 1].

	In some embodiments, the system comprises: a processor circuit configured to execute instruction sets of an application. ’743 Application at [1:25-26]. Processor 11 includes one or more circuits or devices that can execute instructions fetched from memory 12 and/or other element Processor 11 may include any combination of hardware and/or processing techniques or capabilities for executing or implementing logic functions or programs. Processor 11 may include a single core or a multi core processor. Processor 11 includes the functionality for loading operating system 17 and operating any application programs 18 thereon. In some embodiments, Processor 11 can be provided in a microprocessing or a processing unit, such as, for example, Snapdragon processor produced by Qualcomm Inc., processor by Intel Corporation of Mountain View, California, processor manufactured by Motorola Corporation of Schaumburg, Ill.; processor manufactured by Transmeta Corporation of Santa Clara, Calif.; processor manufactured by International Business Machines of White Plains, N.Y., processor manufactured by Advanced Micro Devices of Sunnyvale, California, or any computing circuit or device for performing similar functions. In other embodiments, processor 11 can be provided in a graphics processing unit (GPU), visual processing unit (VPU), or other highly parallel processing circuit or device such as, for example, nVidia GeForce line of GPUs, AMD Radeon line of GPUs, and/or others. Such GPUs or other highly parallel processing circuits or devices may provide superior performance in processing operations on neural networks, graphs, and/or other data structures. In further embodiments, processor 11 can be provided in a micro controller such as, for example, Texas instruments, Atmel, Microchip Technology, ARM, Silicon Labs, Intel, and/or other lines of micro controllers. In further embodiments, processor 11 can be provided in a

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	quantum processor such as, for example, D-Wave Systems, Microsoft, Intel, IBM, Google, Toshiba, and/or other lines of quantum processors. In further embodiments, processor 11 can be provided in a biocomputer such as DNA-based computer, protein-based computer, molecule-based computer, and/or others. In further embodiments, processor 11 includes any circuit or device for performing logic operations. Processor 11 can be based on any of the aforementioned or other available processors capable of operating as described herein. Computing Device 70 may include one or more of the aforementioned or other processors. In some designs, processor 11 can communicate with memory 12 via a system bus 5. In other designs, processor 11 can communicate directly with memory 12 via a memory port 10. '743 Application at [53:15-38]. In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar's 605 surrounding within Application Program 18. '743 Application at [62:14-22].

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	ACAAO Unit 100 may create or generate one or more (i.e. stream, etc.) Collections of Object Representations 525 comprising Object Representations 625, Object Properties 630, and/or other elements or information representing Objects 615 in Soldier's 605a surrounding. '743 Application at [147:33-35]. In the future, ACAAO Unit 110 may compare incoming Collections of Object Representations 525 representing Objects 615 in Soldier's 605a surrounding with previously learned Collections of Object Representations 525 including optionally using any Extra Info 527 for enhanced decision making. '743 Application at [148:5-8].  FIG. 30 '743 Application at [Fig. 30]. At step 9125, a new collection of object representations is received. '743 Application at [140:3-3].

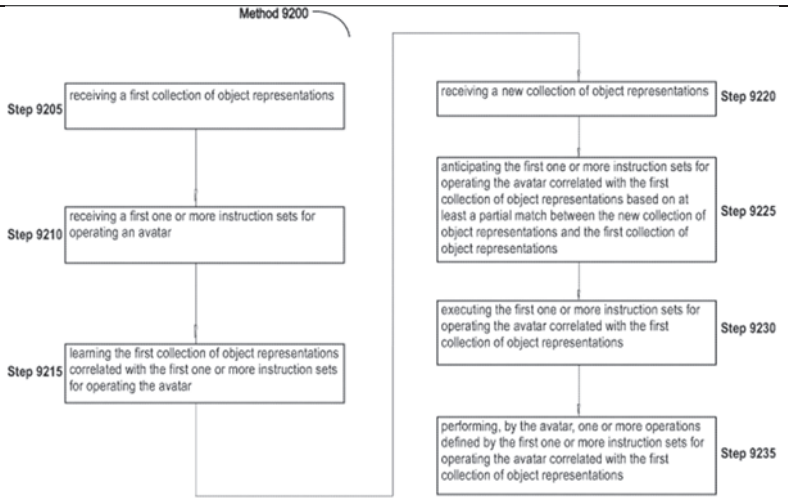


FIG. 31

’743 Application at [Fig. 31].

At step 9220, a new collection of object representations is received.

’743 Application at [144:4-4].

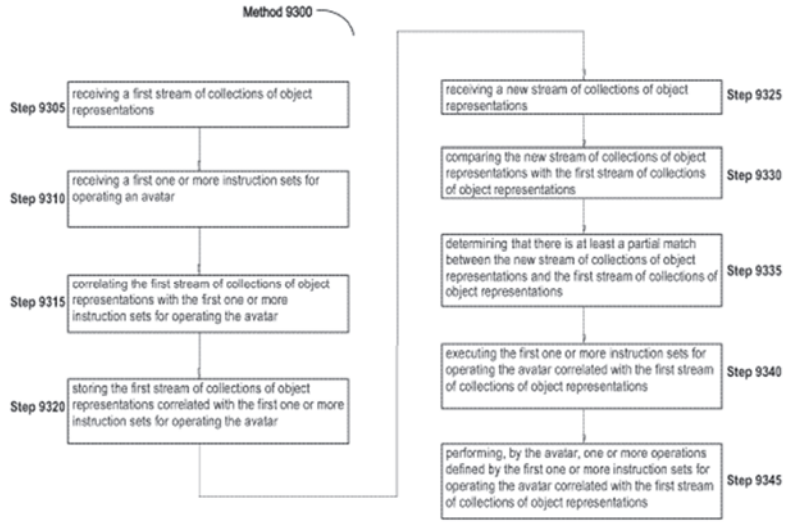


FIG. 32

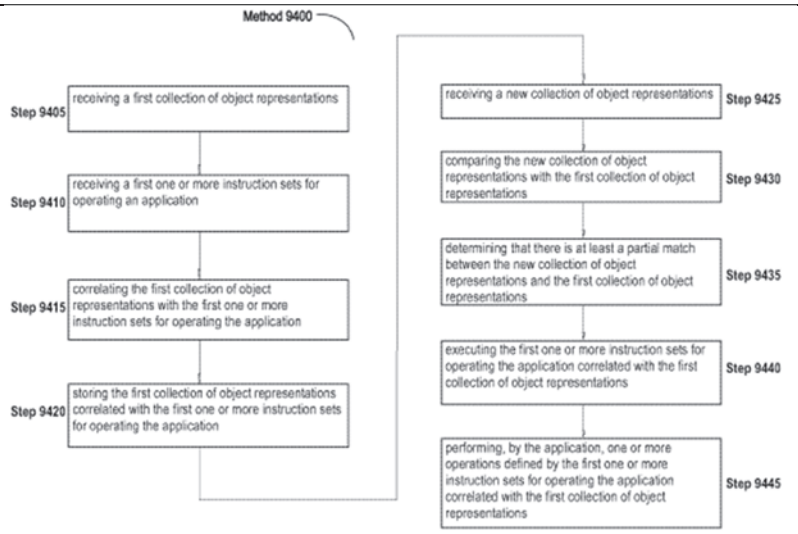


FIG. 33

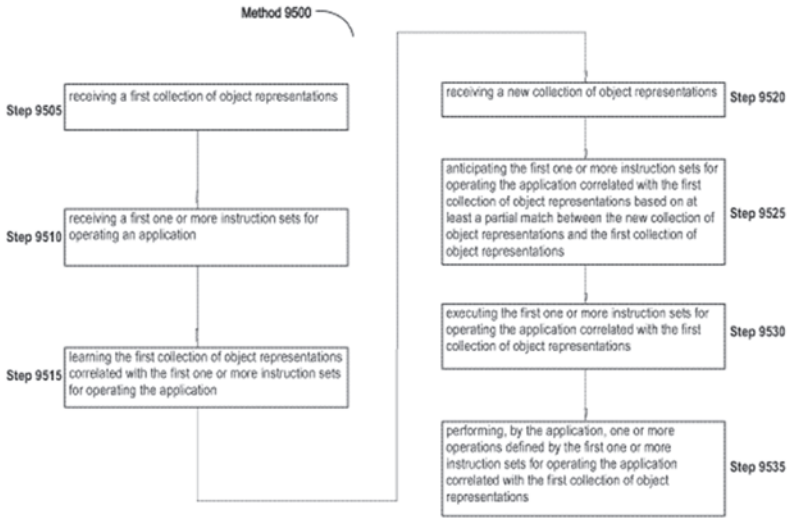


FIG. 34

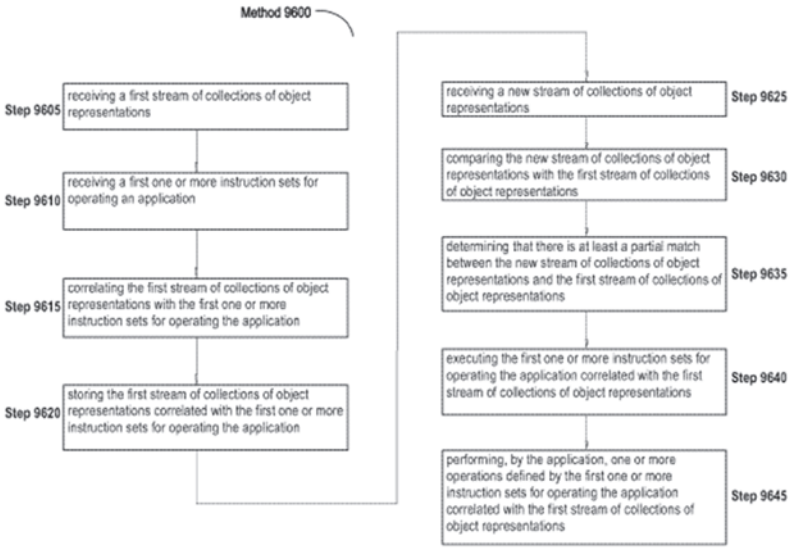
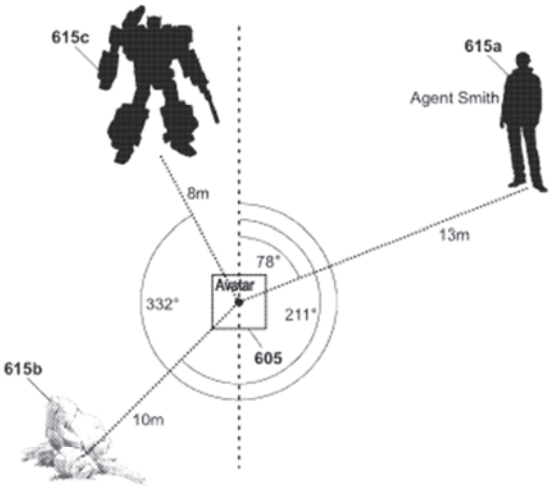
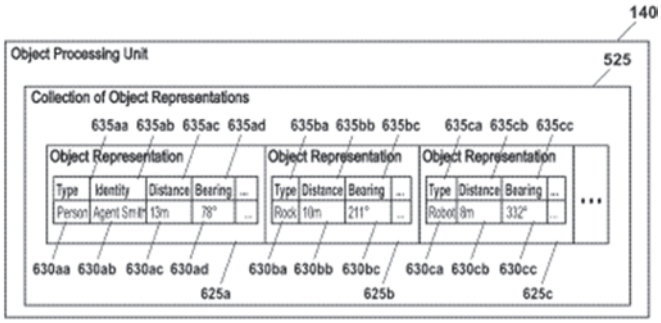
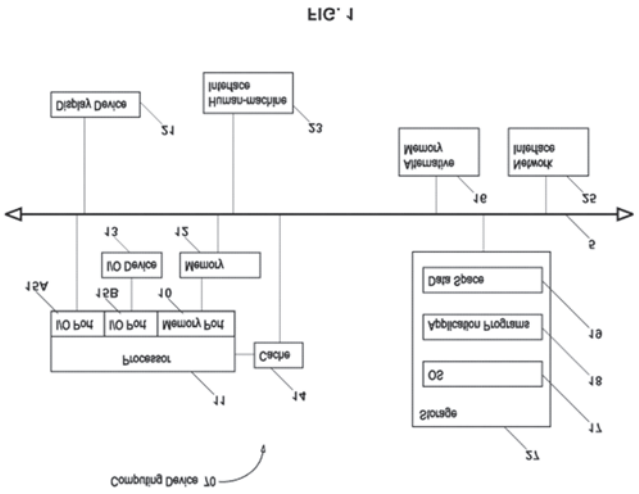


FIG. 35

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	’743 Application at [Figs. 32-35].  FIG. 5A  FIG. 5B ’743 Application at [Figs. 5A-5B]. As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. ’743 Application at [73:27-29].
means for determining the first one or more instruction sets for operating the first	The ’743 Application supports “means for determining the first one or more instruction sets for operating the first avatar of the application based on at least partial match between the second one or more object representations and the first one or more object

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avatar of the application based on at least partial match between the second one or more object representations and the first one or more object representations; and	representations." For example, the '734 Application discloses:  '743 Application at [Fig. 1]. In some embodiments, the system comprises: a processor circuit configured to execute instruction sets of an application. '743 Application at [1:25-26]. Processor 11 includes one or more circuits or devices that can execute instructions fetched from memory 12 and/or other element Processor 11 may include any combination of hardware and/or processing techniques or capabilities for executing or implementing logic functions or programs. Processor 11 may include a single core or a multi core processor. Processor 11 includes the functionality for loading operating system 17 and operating any application programs 18 thereon. In some embodiments, Processor 11 can be provided in a microprocessing or a processing unit, such as, for example, Snapdragon processor produced by Qualcomm Inc., processor by Intel Corporation of Mountain View, California, processor manufactured by Motorola Corporation of Schaumburg, Ill.; processor manufactured by Transmeta Corporation of Santa Clara, Calif.;

	processor manufactured by International Business Machines of White Plains, N.Y., processor manufactured by Advanced Micro Devices of Sunnyvale, California, or any computing circuit or device for performing similar functions. In other embodiments, processor 11 can be provided in a graphics processing unit (GPU), visual processing unit (VPU), or other highly parallel processing circuit or device such as, for example, nVidia GeForce line of GPUs, AMD Radeon line of GPUs, and/or others. Such GPUs or other highly parallel processing circuits or devices may provide superior performance in processing operations on neural networks, graphs, and/or other data structures. In further embodiments, processor 11 can be provided in a micro controller such as, for example, Texas instruments, Atmel, Microchip Technology, ARM, Silicon Labs, Intel, and/or other lines of micro controllers. In further embodiments, processor 11 can be provided in a quantum processor such as, for example, D-Wave Systems, Microsoft, Intel, IBM, Google, Toshiba, and/or other lines of quantum processors. In further embodiments, processor 11 can be provided in a biocomputer such as DNA-based computer, protein-based computer, molecule-based computer, and/or others. In further embodiments, processor 11 includes any circuit or device for performing logic operations. Processor 11 can be based on any of the aforementioned or other available processors capable of operating as described herein. Computing Device 70 may include one or more of the aforementioned or other processors. In some designs, processor 11 can communicate with memory 12 via a system bus 5. In other designs, processor 11 can communicate directly with memory 12 via a memory port 10. ’743 Application at [53:15-38].

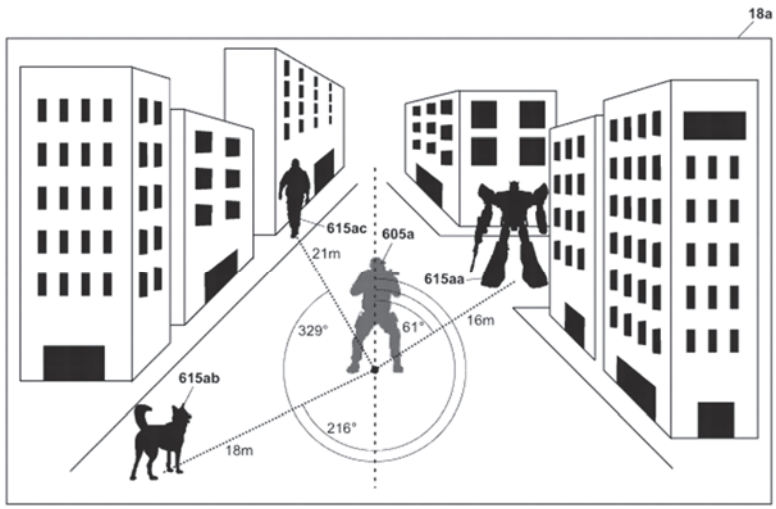


FIG. 36

’743 Application at [Fig. 36].

In the future, ACAAO Unit 110 may compare incoming Collections of Object Representations 525 representing Objects 615 in Soldier’s 605a surrounding with previously learned Collections of Object Representations 525 including optionally using any Extra Info 527 for enhanced decision making. If substantially similar or at least a partial match is found or determined, ACAAO Unit 110 may cause the Instruction Sets 526 correlated with the previously learned Collections of Object Representations 525 to be executed, thereby enabling autonomous operation of Soldier 605a in similar circumstances as in previously learned ones. For instance, ACAAO Unit 100 may learn User SO-directed shooting at Opponent 615aa by Soldier 605a in a circumstance that includes Opponent 615aa, Dog 615ab, Pedestrian 615ac, and/or other Objects 615 among which Soldier 605a may need to maneuver and/or with which Soldier 605a may need to interact, as shown. In the future, when a circumstance that includes one or more Objects 615 with similar Object Properties 630 is encountered, ACAAO Unit 100 may implement the shooting at Opponent 615aa by Soldier 605a autonomously.

’743 Application at [148:5-16].

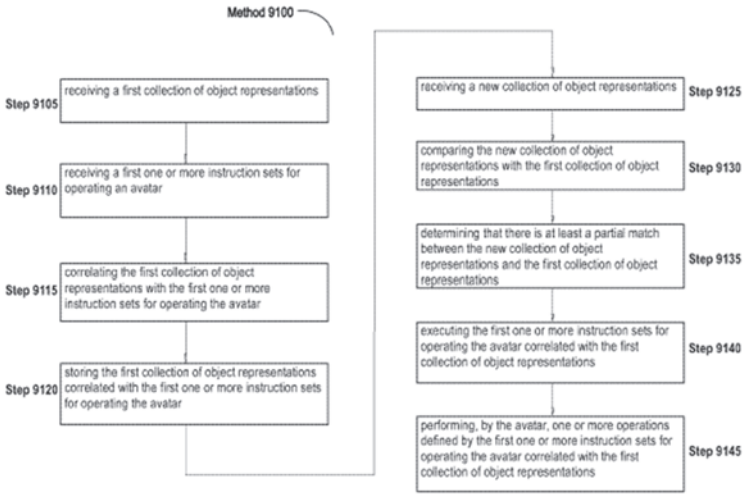


FIG. 30

’743 Application at [Fig. 30].

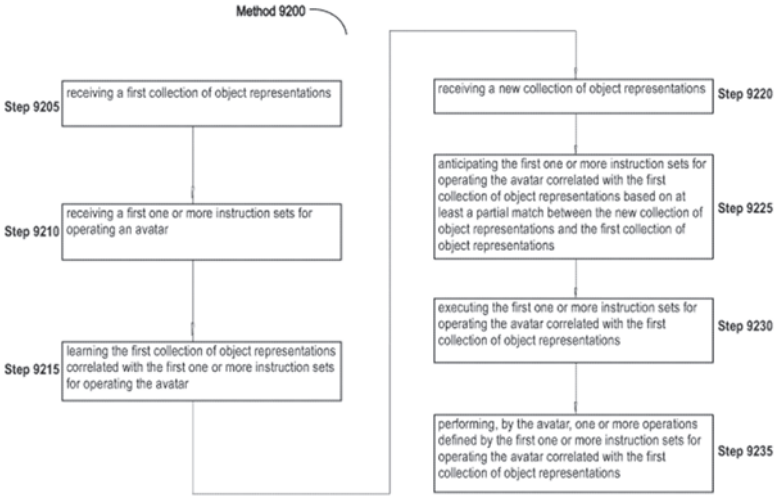
At step 9135, a determination is made that there is at least a partial match between the new collection of object representations and the first collection of object representations.

’743 Application at [140:33-34].

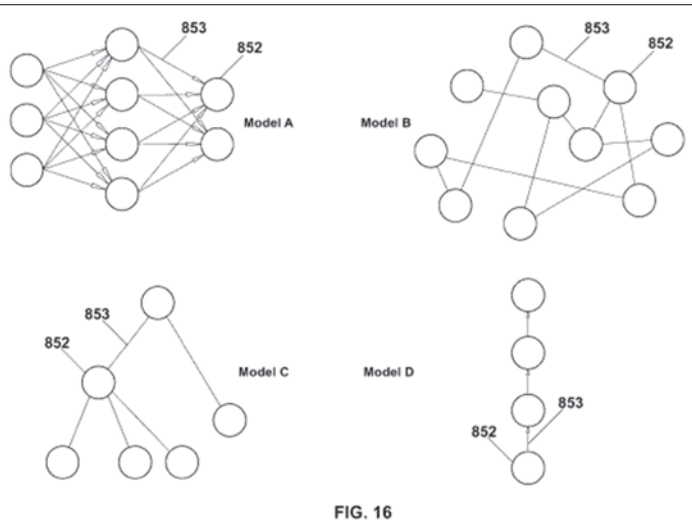
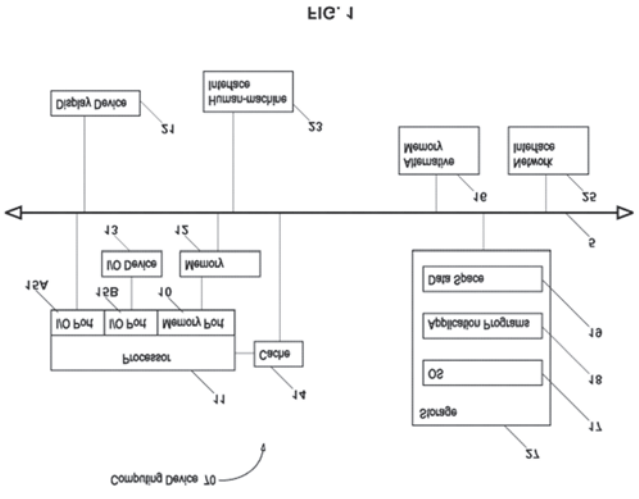
Decision-making Unit 540 comprises the functionality for anticipating or determining Avatar’s 605 operation in circumstances including objects with various properties. Decision-making Unit 540 comprises the functionality for anticipating or determining Instruction Sets 526 to be used or executed in Avatar’s 605 autonomous operation.

’743 Application at [114:31-34].

In some aspects, Decision-making Unit 540 may anticipate or determine Instruction Sets 526 (i.e. anticipatory Instruction Sets 526, etc.) for autonomous Avatar 605 operation by performing Similarity Comparisons 125 of incoming Collections of Object Representations 525 or portions thereof from Object

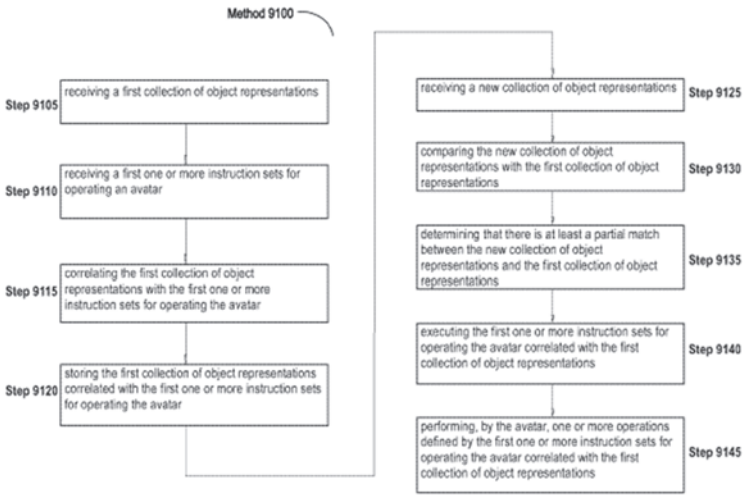
	Processing Unit 140 with Collections of Object Representations 525 or portions thereof from Knowledge Cells 800 in Knowledgebase 530 (i.e. Neural Network 530a, Graph 530b, Collection of Sequences 530c, Sequence 533, Collection of Knowledge Cells 530d, etc.). ’743 Application at [114:38-115:4]. Similarity Comparison 125 may include functions, rules, and/or logic for performing matching or comparisons and for determining that while a perfect match is not found, a partial or similar match has been found. ’743 Application at [100:34-36]. Similarity Comparison 125 enables comparing circumstances including objects with various properties and determining their similarity or match. ’743 Application at [101:12-13].  FIG. 31 ’743 Application at [Fig. 31]. At step 9225, the first one or more instruction sets for operating the avatar correlated with the first collection of

	object representations are anticipated based on at least a partial match between the new collection of object representations and the first collection of object representations. Step 9225 may include any action or operation described in Step 9130 and/or Step 9135 of method 9100 as applicable. ’743 Application at [144:6-9]. Artificial Intelligence Unit 110 comprises the functionality for anticipating one or more instruction sets, data, and/or other information. Artificial intelligence Unit 110 comprises the functionality for anticipating one or more Instruction Sets 526 (i.e. anticipatory Instruction Sets 526, etc.) based on one or more incoming Collections of Object Representations 525 representing Objects 615 in Avatar’s 605 surrounding. The one or more Instruction Sets 526 (i.e. anticipatory Instruction Sets 526, etc.) may be used or executed in Avatar’s 605 autonomous operation. ’743 Application at [88:35-39]. The artificial intelligence unit may be further configured to: anticipate the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations based on at least a partial match between the new collection of object representations and the first collection of object representations. ’743 Application at [1:34-37].

	 FIG. 16 ’743 Application at [Fig. 16].
means for executing, at least in response to the determining, the first one or more instruction sets for operating the first avatar of the application, wherein the first avatar of the application or a second avatar of the application performs one or more operations defined by the first one or more instruction sets for operating the first avatar of the application;	The ’743 Application supports “means for executing, at least in response to the determining, the first one or more instruction sets for operating the first avatar of the application, wherein the first avatar of the application or a second avatar of the application performs one or more operations defined by the first one or more instruction sets for operating the first avatar of the application.” For example, the ’734 Application discloses:  ’743 Application at [Fig. 1]. In some embodiments, the system comprises: a processor circuit configured to execute instruction sets of an

	application. ’743 Application at [1:25-26]. Processor 11 includes one or more circuits or devices that can execute instructions fetched from memory 12 and/or other element Processor 11 may include any combination of hardware and/or processing techniques or capabilities for executing or implementing logic functions or programs. Processor 11 may include a single core or a multi core processor. Processor 11 includes the functionality for loading operating system 17 and operating any application programs 18 thereon. In some embodiments, Processor 11 can be provided in a microprocessing or a processing unit, such as, for example, Snapdragon processor produced by Qualcomm Inc., processor by Intel Corporation of Mountain View, California, processor manufactured by Motorola Corporation of Schaumburg, Ill.; processor manufactured by Transmeta Corporation of Santa Clara, Calif.; processor manufactured by International Business Machines of White Plains, N.Y., processor manufactured by Advanced Micro Devices of Sunnyvale, California, or any computing circuit or device for performing similar functions. In other embodiments, processor 11 can be provided in a graphics processing unit (GPU), visual processing unit (VPU), or other highly parallel processing circuit or device such as, for example, nVidia GeForce line of GPUs, AMD Radeon line of GPUs, and/or others. Such GPUs or other highly parallel processing circuits or devices may provide superior performance in processing operations on neural networks, graphs, and/or other data structures. In further embodiments, processor 11 can be provided in a micro controller such as, for example, Texas instruments, Atmel, Microchip Technology, ARM, Silicon Labs, Intel, and/or other lines of micro controllers. In further embodiments, processor 11 can be provided in a quantum processor such as, for example, D-Wave Systems, Microsoft, Intel, IBM, Google, Toshiba, and/or

	other lines of quantum processors. In further embodiments, processor 11 can be provided in a biocomputer such as DNA-based computer, protein-based computer, molecule-based computer, and/or others. In further embodiments, processor 11 includes any circuit or device for performing logic operations. Processor 11 can be based on any of the aforementioned or other available processors capable of operating as described herein. Computing Device 70 may include one or more of the aforementioned or other processors. In some designs, processor 11 can communicate with memory 12 via a system bus 5. In other designs, processor 11 can communicate directly with memory 12 via a memory port 10. ’743 Application at [53:15-38]. The artificial intelligence unit may be further configured to: cause the processor circuit to execute the fast one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations, the causing performed in response to the anticipating of the artificial intelligence unit, wherein the avatar of the application performs one or more operations denned by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations. ’743 Application at [1:37-2:3]. The method may further comprise: (f) executing the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations, the executing of (f) performed in response to the anticipating of (e). The method may further comprise: (g) performing, by the avatar of the application, one or more operations defined by the first one or more instruction sets for operating the avatar of the application correlated with the first collection of object representations.

	’743 Application at [16:25-29].  FIG. 30 ’743 Application at [Fig. 30]. At step 9140, the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are executed. An instruction set can be executed by a processor and/or other processing element Executing can be performed in response to the aforementioned determining. ’743 Application at [142:10-12]. At step 9145, one or more operations defined by the first one or more instruction sets for operating the avatar correlated with the first collection of object representations are performed by the avatar. ’743 Application at [143:17-18].
Support for Limitation(s) Unique to Substitute Claim 36 (which is based on Original Claim 2)	
wherein the first one or more object representations include: one object	The ’743 Application discloses “wherein the first one or more object representations include: one object representation, a stream of object representations, a collection of object representations, or a stream of

representation, a stream of object representations, a collection of object representations, or a stream of collections of object representations, and wherein the second one or more object representations include: one object representation, a stream of object representations, a collection of object representations, or a stream of collections of object representations, and wherein the one or more objects of the application represented by the first one or more object representations are detected at a first time or during a first time period, and wherein the one or more objects of the application represented by the second one or more object representations are detected at a second time or during a second time period.	collections of object representations, and wherein the second one or more object representations include: one object representation, a stream of object representations, a collection of object representations, or a stream of collections of object representations, and wherein the one or more objects of the application represented by the first one or more object representations are detected at a first time or during a first time period, and wherein the one or more objects of the application represented by the second one or more object representations are detected at a second time or during a second time period" For example, the '734 Application discloses: In some embodiments, Object Processing Unit 140 comprises the functionality for creating or generating Collection of Object Representations 525 (also referred to as Coll of Obj Rep or other suitable name or reference) and storing one or more Object Representations 625 (also referred to simply as object representations, representations of objects, or other suitable name or reference), Object Properties 630 (also referred to simply as object properties or other suitable name or reference), and/or other elements or information into the Collection of Object Representations 525. As such, Collection of Object Representations 525 comprises the functionality for storing one or more Object Representations 625, Object Properties 630, and/or other elements or information. In some designs, Object Representation 625 may include a representation of an object (i.e. Object 615 [later described], etc.) in Avatar's 605 surrounding within Application Program 18. As such, Object Representation 625 may include any information related to an object. In other designs, Object Representation 625 may include or be replaced with an object itself, in which case Object Representation 625 as an element can be omitted. In some aspects, Collection of Object Representations 525 includes one or more Object Representations 625, Object Properties 630, and/or other elements or information related to objects in Avatar's 605 surrounding at a particular time. Collection

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	of Object Representations 525 may, therefore, include knowledge (i.e. unit of knowledge, etc.) of Avatar's 605 circumstance including objects with various properties at a particular time. In some designs, a Collection of Object Representations 525 may include or be associated with a time stamp (not shown), order (not shown), or other time related information. For example, one Collection of Object Representations 525 may be associated with time stamp t1, another Collection of Object Representations 525 may be associated with time stamp t2, and so on. Time stamps t1, t2, etc. may indicate the times of generating Collections of Object Representations 525, for instance. In other embodiments, Object Processing Unit 140 comprises the functionality for creating or generating a stream of Collections of Object Representations 525. A stream of Collections of Object Representations 525 may include one Collection of Object Representations 525 or a group, sequence, or other plurality of Collections of Object Representations 525. In some aspects, a stream of Collections of Object Representations 525 includes one or more Collections of Object Representations 525, and/or other elements or information related to objects in Avatar's 605 surrounding over time. A stream of Collections of Object Representations 525 may, therefore, include knowledge (i.e. unit of knowledge, etc.) of Avatar's 605 circumstance including objects with various properties over time. As circumstances including objects with various properties in Avatar's 605 surrounding change (i.e. objects and/or their properties change, move, act, transform, etc.) over time, this change may be captured in a stream of Collections of Object Representations 525. In some designs, each Collection of Object Representations 525 in a stream may include or be associated with the aforementioned time stamp, order, or other time related information. For example, one Collection of Object Representations 525 in a stream may be associated with order 1, a next Collection of Object Representations 525 in the stream may be associated with order 2, and so on.

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’743 Application at [62:14-63:8]

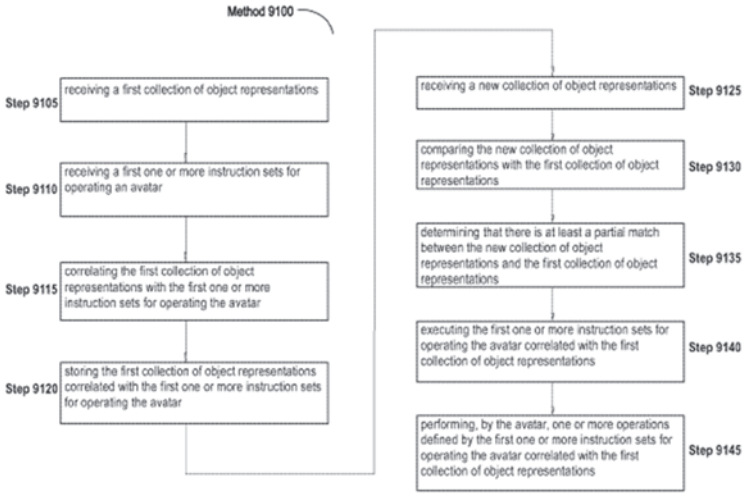


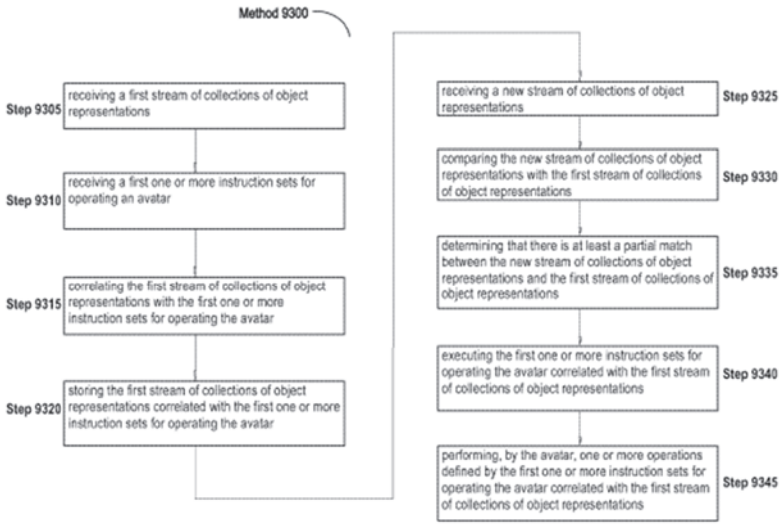
FIG. 30

’743 Application at [Fig. 30]

At step 9105, a first collection of object representations is received. A collection of object representations (i.e. Collection of Object Representations 525, etc.) may include one or more object representations (i.e. Object Representations 625, etc.), object properties (i.e. Object Properties 630, etc.), and/or other elements or information. In some designs, an object representation includes a representation of an object (i.e. Object 615, etc.) in an avatar's (i.e. Avatar's 605, etc.) surrounding within an application (i.e. Application Program 18, etc.). In other designs, an object representation includes a representation of an object of an application. As such, an object representation may include any information related to an object. In further designs, an object representation may include or be replaced with an object itself, in which case the object representation as an element can be optionally omitted. In some embodiments, a collection of object representations may include one or more object representations, object properties, and/or other elements or information obtained in an avatar's surrounding at a particular time. A

	collection of object representations may, therefore, include knowledge (i.e. unit of knowledge, etc.) of an avatar's circumstances including objects with various properties at a particular time. In other embodiments, where an application does not comprise an avatar or rely on an avatar for its operation, a collection of object representations may include one or more object representations, object properties, and/or other elements or information obtained in an application or part thereof at a particular time. A collection of object representations may, therefore, include knowledge (i.e. unit of knowledge, etc.) of an application's circumstances including objects with various properties at a particular time. In some designs, a collection of object representations may include or be associated with a time stamp (not shown), order (not shown), or other time related information. in further embodiments, a collection of object representations may include or be substituted with a stream of collections of object representations, and vice versa. Therefore, the terms collection of object representations and stream of collections of object representations may be used interchangeably depending on context. A stream of collections of object representations may include one collection of object representations or a group, sequence, or other plurality of collections of object representations. In some aspects, a stream of collections of object representations may include one or more collections of object representations, and/or other elements or information obtained in an avatar's surrounding over time. A stream of collections of object representations may, therefore, include knowledge (i.e. unit of knowledge, etc.) of an avatar's circumstances including objects with various properties over time. As circumstances including objects with various properties in an avatar's surrounding change (i.e. objects and/or their properties change, move, act, transform, etc.) over time, this change may be captured in a stream of collections of object representations. In further embodiments, where an application does not comprise an avatar or rely on an avatar for its operation,

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	a stream of collections of object representations may include one or more collections of object representations, and/or other elements or information obtained in an application or part thereof over time. A stream of collections of object representations may, therefore, include knowledge (i.e. unit of knowledge, etc.) of an application's circumstances including objects with various properties over time. '743 Application at [135:29-136:23]  FIG. 32 '743 Application at [Fig. 32] At step 9305, a first stream of collections of object representations is received. '743 Application at [144:23-23]

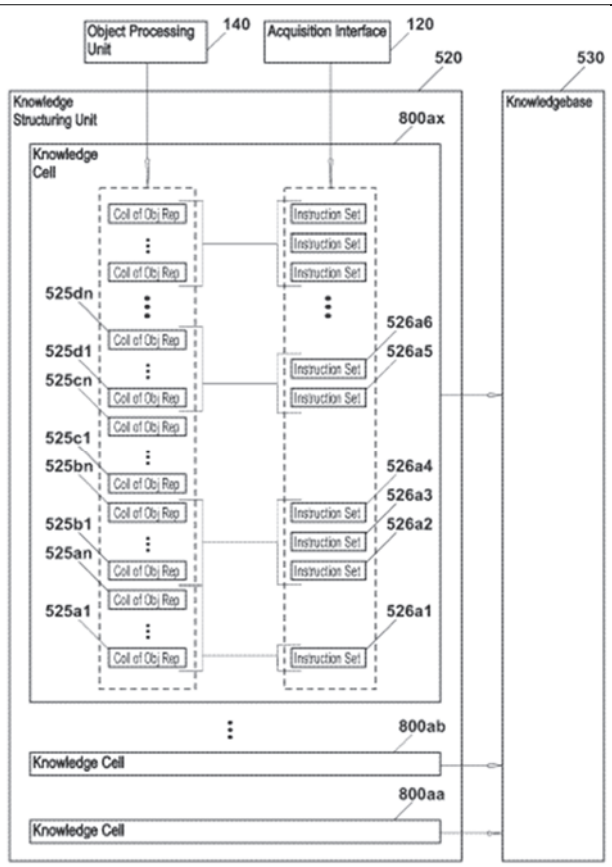
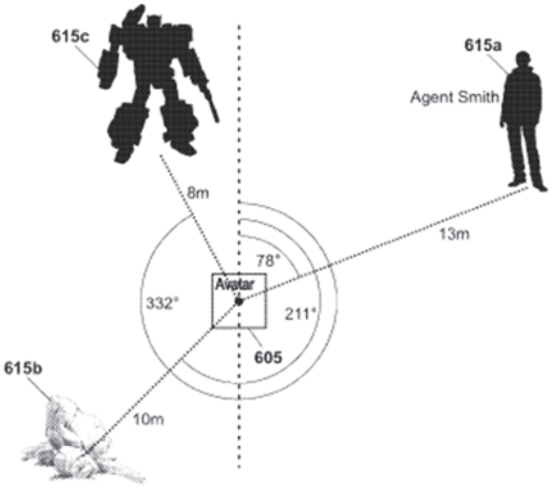
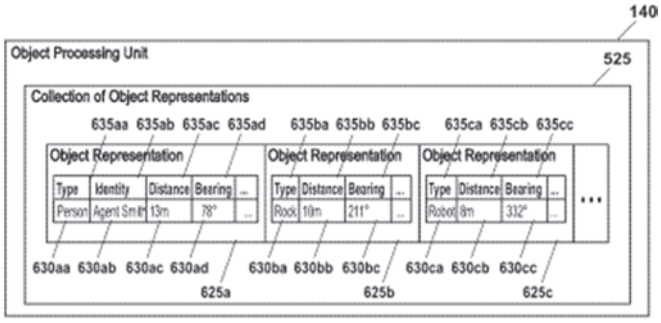


FIG. 14

’743 Application at [Fig. 14]

Referring to Fig. 14, an embodiment of Knowledge Structuring Unit 520 correlating streams of Collections of Object Representations 525 with any Instruction Sets 526 and/or Extra Info 527 is illustrated. For example, Knowledge Structuring Unit 520 may create Knowledge Cell 800ax and structure within it a stream of Collections of Object Representations 525a1-525an correlated with Instruction Set 526a1 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a stream of Collections of Object Representations 525b1-525bn correlated with Instruction Sets 526a2-526a4 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a stream of Collections of Object Representations 525c1-525cn without correlated Instruction Sets 526 and/or

	Extra Info 527. Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax a stream of Collections of Object Representations 525d1-525dn correlated with Instruction Sets 526a5-526a6 and/or any Extra Info 527 (not shown). Knowledge Structuring Unit 520 may further structure within Knowledge Cell 800ax additional streams of Collections of Object Representations 525 correlated with any number (including zero [i.e. uncorrelated]) of Instruction Sets 526 and/or Extra Info 527 by following similar logic as described above. '743 Application at [92:22-34]  FIG. 5A  FIG. 5B '743 Application at [Figs. 5A-5B] As shown for example in Fig. 5B, Object Processing Unit 140 may create or generate Collection of Object

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	Representations 525 including Object Representation 625a representing Object 615a, Object Representation 625b representing Object 615b, Object Representation 625c representing Object 615c, etc. '743 Application at [73:27-29].

3. The Original Application for the '134 Patent Enables the Proposed Substitute Claims

143. I have also been asked to evaluate whether the proposed Substitute Claims are enabled by the original application. I have been informed that, to be enabling, a specification or application must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation, as of the patent's effective filing date. I understand that the factors to consider when determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary; (2) the amount of direction or guidance presented; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims.

144. Given the table of exemplary citations in the previous section, it is my opinion that a POSA would have had more than enough information to make and use the full scope of the proposed substitute claims without undue experimentation. To the extent Petitioner and/or Petitioner's expert argue

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differently, I reserve the right to respond.

4. The Proposed Substitute Claims are Patentable Over the Cited Prior Art

145. As discussed in Section IX above, neither Thomas alone, nor Thomas in view of the knowledge of a POSA, discloses the claimed limitations. *See Supra* Section IX. As also discussed in Section IX above, Buehler does not disclose the claimed limitations. *See Supra* Section IX. Each of substitute claims 21 to 36 further narrow independent claims 1, 10, and 19.

146. With regard to Ground 1 (for claims 1-20) and Ground 2 (claims 3, 5, and 12-14), the Petition relies on anticipation or obviousness by Thomas. Petition, 4, 9. *See supra* Sections IX.1.A, IX.2. For Grounds 1 and 2, Petitioner points to certain disclosures in Thomas regarding Thomas's simulator, Petition, 15-16, as allegedly disclosing "based on at least partial match between the second one or more object representations and the first one or more object representations." *See* Petition, 15 (quoting Ex. 1005, 5:25-29). But, as explained in Sections IX.1.A, IX.2, Thomas's disclosure of "stored data," "user's behavior," "tendencies," "inclinations," and "event" are all different than the claimed "object representations." For claim 3, the Petition maps Thomas's spatial position of an avatar and virtual weather/road conditions to the claimed "first one or more object representations." Pet., 3, 12-13. Thomas does not disclose the substitute amended features (included in each of the substitute claims) including the first one or more

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object representations comprising a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, wherein (i) the first and second object representations include respective specific data structures (wherein the first data structure comprises a label and a coordinate as claimed), and (ii) those data structures are each correlated with instruction sets, and (iii) those data structures are generated in the claimed manner, as recited in each of the proposed substitute claims.

147. Regarding (i) and (ii), Thomas discloses "stored data," "user's behavior," "tendencies," "inclinations," and "event," which Petitioner maps to the claimed "object representations." Even if Petitioner's mapping is excepted and Thomas's spatial position of an avatar or virtual weather/road conditions are mapped to the claimed "object representations," Thomas still fails to teach that one of those elements includes a first data structure generated in the claimed manner. Further, the Petition does not establish that Thomas discloses that such a data structure is generated at least in response to processing a type and label of the first 3D object and a coordinate indicating the processed location of the first 3D object. Further, Thomas does not disclose a second object representation including a second data structure. Thomas also does not disclose the first and second data structures correlated with Thomas's pressed button, combination of

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buttons, or joystick move of controller. A POSA would not understand any of these elements from Thomas to necessarily include labels indicating object type and coordinates indicating object locations. Rather, the '134 Patent discloses a collection of object representations comprising a data structure, as shown in Figure 5B. *See* Ex. 1001, Fig. 5B. Therefore, Thomas does not disclose the first collection of object representations comprising a first data structure including a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object. Thomas also does not disclose the second collection of object representations comprises a second data structure generated in the claimed manner. Thomas does not disclose any object representations in the claimed manner.

148. Regarding (iii), Thomas fails to disclose data structures in the way claimed, let alone the first data structure and second data structure correlated with the first one or more instruction sets for operating the first avatar of the application, and the second data structure is correlated with the second one or more instruction sets for operating the first device.

149. With regard to Ground 3, the Petition relies on anticipation by Buehler. Petition, 4, 55. *See supra* Section IX.3.A. For Ground 3, Petitioner points to certain disclosures in Buehler regarding Buehler's virtual gripper, Petition, 15-16, as allegedly disclosing "object representations" with respect to

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claim 3. *See* Petition, 56; Ex. 1006, 21:46-54. But, as explained in Section IX.3.A, Buehler's disclosure of the virtual gripper is different than the claimed "object representations" because it is a physical object, not "an object of an application." Further, the Petition maps Buehler's template images and stored representations to the claimed "first one or more object representations" in claim 1. Pet., 56-57. Buehler does not disclose that any of those object representations includes a first data structure generated in the manner claimed. Further, Buehler, in these disclosures or in any other disclosure, does not disclose the substitute amended features including the first one or more object representations comprising a first object representation that represents a first three dimensional (3D) object of the application, and a second object representation that represents a second three dimensional (3D) object of the application, wherein (i) the first and second object representations include respective specific data structures (wherein the first data structure comprises a label and a coordinate as claimed), and (ii) those data structures are each correlated with instruction sets, and (iii) those data structures are generated in the claimed manner, as recited in each of the proposed substitute claims.

150. Regarding (i) and (ii), Buehler discloses virtual gripper which Petitioner maps to the claimed "object *representations*." Even if Petitioner's mapping is excepted and Buehler's object is mapped to the claimed "object

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representations," Buehler still fails to teach that the object includes a first data structure generated in the claimed manner. A POSA would not understand Buehler's virtual gripper to necessarily include labels indicating object type and coordinates indicating object locations. Buehler's template images and stored representations also fails to teach a first data structure generated in the claimed manner. Buehler does not disclose such a data structure generated at least in response to processing a type and a label of the first 3D object, and comprises a label indicating the processed type of the first 3D object, and a coordinate indicating the processed location of the first 3D object. Further, Buehler does not disclose a second object representation including a second data structure as claimed. Therefore, Buehler does not disclose the first collection of object representations comprising a first data structure including a label indicating the processed type of the first 3D object and a coordinate indicating the processed location of the first 3D object. Buehler also does not disclose the second collection of object representations comprises a second data structure generated in the claimed manner. Buehler does not disclose any object representations in the claimed manner.

151. Regarding (iii), Buehler fails to disclose data structures in the way claimed, let alone the first data structure and second data structure correlated with the first one or more instruction sets for operating the first avatar of the

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application, and the second data structure is correlated with the second one or more instruction sets for operating the first device.

152. Furthermore, each of substitutes claims 21 through 33 and 36 currently narrow claims 2-5, 7, 9, 11-18, each of which depends from claim 1. The proposed substitutes add limitations to these claims that I just discussed with respect to original claims 1. Therefore, for the reasons discussed regarding claim 1 and the amended substitute elements, neither Thomas or Buehler disclose or each of the limitations of claims 21 through 33 and 36.

153. Further, with regard to the limitations of claims 21 through 33 and 36, it would not have been obvious for a POSA to modify Thomas's system to implement the substitute limitations added to each of the claims, as a POSA would not have had the motivation to combine or modify Thomas's system to implement such features. It would not have been obvious for a POSA to modify Buehler's system to implement the substitute limitations added to each of the claims, as a POSA would not have had the motivation to combine or modify Buehler's system to implement such features.

154. Claim 34 further narrows current claim 10. As discussed above, the proposed amendments limit claim 34 by adding the same limitations as discussed with reference to claim 21. Therefore, for the same reasons I discussed with respect to claim 21, Thomas does not disclose or suggest all of the limitations of

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claim 34. It would not have been obvious for a POSA to modify Thomas's system to implement the substitute limitations added to claim 34, as a POSA would not have had the motivation to combine or modify Thomas's system to implement such features, as explained above. Further still, Buehler does not disclose or suggest all of the limitations of claim 34. It would not have been obvious for a POSA to modify Buehler's system to implement the substitute limitations added to claim 34, as a POSA would not have had the motivation to combine or modify Buehler's system to implement such features, as explained above. Therefore, neither Thomas nor Buehler would disclose or suggest claim 34.

155. Claim 35 further narrows current claim 19. As discussed above, the proposed amendments limit claim 35 by adding the same limitations as discussed with reference to claim 21. Therefore, for the same reasons I discussed with respect to claim 21, Thomas does not disclose or suggest all of the limitations of claim 35. It would not have been obvious for a POSA to modify Thomas's system to implement the substitute limitations added to claim 35, as a POSA would not have had the motivation to combine or modify Thomas's system to implement such features, as explained above. Further still, Buehler does not disclose or suggest all of the limitations of claim 35. It would not have been obvious for a POSA to modify Buehler's system to implement the substitute limitations added to claim 35, as a POSA would not have had the motivation to combine or modify

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Buehler's system to implement such features, as explained above. Therefore, neither Thomas nor Buehler would disclose or suggest claim 35.

XI. CONCLUSION

156. This declaration represents the opinions that I have formed up to date based on the material currently available to me. I reserve the right to revise, supplement, and/or amend my opinions stated in this declaration based on new information that becomes available to me and on my continuing analysis of the materials available to me.

157. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine, imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: April 1, 2024



Dr. Eli Saber

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