

What is claimed is:

1. ~~— A method for analyzing a diagnostic image of a subject, the method comprising:
processing automatically the image of the subject using a sub-image processor for
classifying the image to one or more body regions and orienting and cropping a classified image
to obtain at least one oriented, cropped and labeled sub-image for each body region that is
automatically classified;
directing the sub-image to at least one artificial intelligence processor; and
evaluating the sub-image by the artificial intelligence processor thereby analyzing the
radiographic image of the subject.~~
2. ~~— The method according to claim 1 further comprising using the artificial intelligence
processor for assessing the sub-image for body regions and for a presence of a medical condition.~~
3. ~~— The method according to claim 2 further comprising using the artificial intelligence
processor for diagnosing the medical condition from the sub-image.~~
4. ~~— The method according to claim 1 further comprising using artificial intelligence
processor for assessing the sub-image for a positioning of the subject.~~
5. ~~— The method according to claim 4 further comprising rectifying the positioning of the
subject to proper positioning.~~
6. ~~— The method according to claim 1, the processor automatically rapidly processing the
image to obtain the sub-image.~~
7. ~~— The method according to claim 6, the processor processing the image to obtain the sub-
image in: less than about one minute, less than about 30 seconds, less than about 20 seconds, less
than about 15 seconds, less than about 10 seconds, or less than about 5 seconds.~~
8. ~~— The method according to claim 1, evaluating further comprises comparing the sub-image
to a plurality of reference images in at least one of a plurality of libraries.~~

9. — The method according to claim 8, the plurality of libraries each comprises a respective plurality of reference images.
10. — The method according to claim 9, each of the plurality of libraries comprises respective plurality of reference images specific or non-specific to an animal species.
11. — The method according to claim 1 further comprising matching the sub-image to a reference image thereby assessing orientation and at least one body region.
12. — The method according to claim 8, the reference images are oriented in Digital Imaging and Communication in Medicine (DICOM) standard hanging protocol.
13. — The method according to claim 1, cropping further comprises isolating a specific body region in the sub-image.
14. — The method according to claim 9, further comprising categorizing the reference images according to veterinary standard body region labels.
15. — The method according to claim 1, orienting further comprises adjusting the image to veterinary standard hanging protocol.
16. — The method according to claim 1, cropping further comprises trimming the sub-images to a standard aspect ratio.
17. — The method according to claim 1, classifying further comprises identifying and labeling body region according to veterinary standard body region labels.
18. — The method according to claim 1, classifying further comprises comparing the image to a library of sample standard images.

19. — ~~The method according to claim 18 further comprising matching the image to a sample standard image in the library thereby classifying the image to one or more body regions.~~

20. — ~~The method according to claim 1, cropping further comprises identifying a boundary in the image delineating each classified body region.~~

21. — ~~The method according to claim 1 further comprising prior to classifying, extracting an image signature.~~

22. — ~~The method according to claim 1, the image is from a radiology exam selected from: radiographs, magnetic resonance imaging (MRI), magnetic resonance angiography (MRA), computed tomography (CT), fluoroscopy, mammography, nuclear medicine, Positron emission tomography (PET), and ultrasound.~~

23. — ~~The method according to claim 1, the image is a photograph.~~

24. — ~~The method according to claim 1, the subject is selected from: a mammal, a reptile, a fish, an amphibian, a chordate, and a bird.~~

25. — ~~The method according to claim 25, the mammal is selected from: dog, cat, rodent, horse, sheep, cow, goat, camel, alpaca, water buffalo, elephant, and human.~~

26. — ~~The method according to claim 1, the subject is selected from: a pet, a farm animal, a high value zoo animal, a wild animal, and a research animal.~~

27. — ~~The method according to claim 1 further comprising automatically generating at least one report containing evaluation of the sub-image by the artificial intelligence processor.~~

28. — ~~A system for analyzing images of a subject, the system comprising:~~

a receiver to receive an image of the subject; at least one processor to automatically run an image identification and processing algorithm to identify, crop, orient and label at least one body region in the image to obtain a sub-image; at least one artificial intelligence processor to evaluate the sub-image; and a device to display the sub-image and evaluated artificial intelligence result.

29.—The system according to claim 28, the processor automatically rapidly processes the image to obtain the sub-image.

30.—The system according to claim 29, the processor processes the image to obtain the labeled image in: less than one minute, less than 30 seconds, less than 20 seconds, less than 15 seconds, less than 10 seconds, or less than 5 seconds.

31.—The system according to claim 28 further comprises a library of standard images.

32.—The system according to claim 31, the standard images comply with veterinary norms for hanging protocol and body region labels.

33.—A method for rapidly and automatically preparing images of a subject for display, the method comprising:

processing an unprocessed image of the subject using a processor to algorithmically classify the image to one or more separate body region categories, by automatically cropping, extracting a signature and comparing a cropped, oriented image signature to a database of signatures of images of known orientation and body regions to obtain a best match orientation and body region labeling; and,

presenting each prepared body region labeled image on a display device and for analysis.

34.—In a veterinary radiograph diagnostic image analyzer, the improvement comprising running a rapid algorithm with a processor that pre-processes a radiograph image of a subject to automatically identify one or more body regions in the image; the processor further functions to perform at least one of: automatically creating a separate sub-image for each identified body

~~region, cropping and optionally normalizing an aspect ratio of each sub-image created, automatically labeling each sub-image as a body region, automatically orienting the body region in the sub-image, and the processor further automatically directs the diagnostic sub-image to at least one artificial intelligence processor specific for evaluating cropped, oriented and labeled diagnostic sub-image.~~

~~35.~~ 1 A method for identifying and diagnosing a presence of a disease or a condition in at least one image of a subject, the method comprising:

obtaining at least one image or one data point of the subject and classifying the image to one or more body regions, labelling and orientating the image using a sub-image processor to obtain a classified, labeled and oriented sub-image;

directing the classified sub-image to at least one artificial intelligence (AI) evaluation processor to obtain an evaluation result, and comparing the evaluation result to a database with evaluation results and matched written templates, or comparing the evaluation result to at least one dataset cluster, to obtain at least one cluster result;

measuring the distance between the cluster result and the evaluation result to obtain at least one cluster diagnosis using a synthesis processor; and

assembling the cluster diagnosis to obtain a report thereby identifying and diagnosing the presence of the disease or the condition in the subject.

~~36. — The method according to claim 35 further comprising prior to classifying, obtaining at least one image or one data point of the subject.~~

~~37.~~ 2. The method according to claim ~~35-1~~ further comprising prior to comparing, compiling the dataset cluster using a clustering tool selected from: K-means clustering, Mean shift clustering, Density-Based Spatial Clustering, Expectation–Maximization (EM) Clustering, and Agglomerative Hierarchical Clustering, and obtaining, processing, evaluating, and constructing a library of a plurality of identified and diagnosed dataset and corresponding medical reports selected from: radiology reports, laboratory reports, histology reports, physical exam reports, and microbiology reports, with a plurality of known diseases or conditions, and processing further comprises classifying the plurality of identified and diagnosed dataset images

to the body regions to obtain a plurality of classified dataset images, and orienting and cropping the plurality of classified dataset images to obtain a plurality of oriented, cropped and labeled dataset sub-images; and optionally performing at least one step selected from the following steps: evaluating further comprises directing the plurality of oriented, cropped and labeled dataset sub-images and corresponding medical reports to at least one AI processor to obtain at least one diagnosed AI processor result; directing further comprises classifying the plurality of oriented, cropped and labeled dataset sub-images and corresponding medical reports with at least one variable selected from: age, species, breed, weight, sex, and location; constructing the library of the plurality of identified and diagnosed dataset images further comprises creating at least one cluster of the diagnosed AI processor result to obtain at least one AI processor exemplar result and thereby compiling the dataset cluster; assigning at least one cluster diagnosis to the cluster of the diagnosed AI processor result; and, assigning cluster diagnosis further comprises adding reports within the cluster and/or additional information written by an evaluator

~~38.—The method according to claim 37 compiling further comprises obtaining, processing, evaluating, and constructing a library of a plurality of identified and diagnosed dataset and corresponding medical reports selected from: radiology reports, laboratory reports, histology reports, physical exam reports, and microbiology reports, with a plurality of known diseases or conditions.~~

~~39.—The method according to claim 38, processing further comprises classifying the plurality of identified and diagnosed dataset images to the body regions to obtain a plurality of classified dataset images, and orienting and cropping the plurality of classified dataset images to obtain a plurality of oriented, cropped and labeled dataset sub-images.~~

~~40.—The method according to claim 39, evaluating further comprises directing the plurality of oriented, cropped and labeled dataset sub-images and corresponding medical reports to at least one AI processor to obtain at least one diagnosed AI processor result.~~

~~41. The method according to claim 40 directing further comprises classifying the plurality of oriented, cropped and labeled dataset sub-images and corresponding medical reports with at least one variable selected from: age, species, breed, weight, sex, and location.~~

~~42. The method according to claim 41, constructing the library of the plurality of identified and diagnosed dataset images further comprises creating at least one cluster of the diagnosed AI processor result to obtain at least one AI processor exemplar result and thereby compiling the dataset cluster.~~

~~43. The method according to claim 42 further comprising assigning at least one cluster diagnosis to the cluster of the diagnosed AI processor result.~~

~~44. The method according to claim 43, assigning cluster diagnosis further comprises adding reports within the cluster and/or additional information written by an evaluator.~~

45. 3. The method according to claim 351, measuring further comprises determining a distance between the cluster result and at least one selected from: the evaluation result, the dataset cluster, and a centroid of the cluster result and selecting a result from: a case within the cluster that has the nearest match, a result from another case in the cluster, and a centroid case; and optionally performing at least one of the steps selected from the following: adding result information of the cluster result by an evaluator to the report generated from the cluster; editing the report by removing a portion of the report of the cluster diagnosis which is less than a threshold of prevalence in a plurality of reports in the cluster; designating by an evaluator the threshold of prevalence to be less than 100% and more than 0%; designating by the evaluator the threshold of prevalence to be less than about 80%; rapidly processing the evaluation result by a diagnostic AI processor to obtain the report, for example, the diagnostic AI processor processing the image to obtain the report in less than about ten minutes, less than about 9 minutes, less than

about 8 minutes, less than about 7 minutes, less than about 6 minutes, less than about 5 minutes, less than about 4 minutes, less than about 3 minutes, less than about 2 minutes, or less than about 1 minute; categorizing the library of identified and diagnosed dataset images with known diseases and conditions to at least one of a plurality of animal species; identifying the diagnosed AI processor result with an identification tag; and, selecting and adding the image and/or a medical result of the subject to the dataset cluster.

~~46. The method according to claim 45 further comprises selecting a result from: a case within the cluster that has the nearest match, a result from another case in the cluster, and a centroid case.~~

~~47. The method according to claim 46 selecting further comprises adding result information of the cluster result by an evaluator to the report generated from the cluster.~~

~~48. The method according to claim 45 further comprising editing the report by removing a portion of the report of the cluster diagnosis which is less than a threshold of prevalence in a plurality of reports in the cluster.~~

~~49. The method according to claim 48, wherein the threshold of prevalence designated by an evaluator, is selected to be less than 100% and more than 0%.~~

~~50. The method according to claim 48 wherein the threshold of prevalence designated by an evaluator, is selected to be less than about 80%.~~

~~51. The method according to claim 35, rapidly processing the evaluation result by a diagnostic AI processor to obtain the report.~~

~~52. The method according to claim 51, the diagnostic AI processor processing the image to obtain the report in: less than about ten minutes, less than about 9 minutes, less than about 8 minutes, less than about 7 minutes, less than about 6 minutes, less than about 5 minutes, less than about 4 minutes, less than about 3 minutes, less than about 2 minutes, or less than about 1 minute.~~

~~53. The method according to claim 38, the library of identified and diagnosed dataset images with known diseases and conditions are categorized to at least one of a plurality of animal species.~~

~~54. The method according to claim 43 further comprising identifying the diagnosed AI processor result with an identification tag.~~

~~55. The method according to claim 37 further comprising selecting and adding the image and/or a medical result of the subject to the dataset cluster.~~

~~56.~~ 4. A system for diagnosing a presence of a disease or a condition in an image and/or a medical result, of a subject, the system comprising:

a receiver to receive an image and/or the medical result of the subject; at least one processor to automatically run an image identification and processing algorithm to identify, crop, orient and label at least one body region in the image to obtain a classified sub-image; at least one artificial intelligence processor to evaluate the classified sub-image and/or the medical result and obtain an evaluation result; and at least one diagnostic artificial intelligence (AI) processor to automatically run a cluster algorithm to compare the evaluation result to obtain a cluster result, measure distance between cluster result and a previously created cluster result from a specific dataset defined by one or more variables, evaluation result to obtain cluster diagnosis, and

assemble a report; and the diagnostic AI processor automatically rapidly processes the image, and/or the medical result to generate a report.

~~57. The system according to claim 56, the diagnostic AI processor automatically rapidly processes the image, and/or the medical result to generate a report.~~

58. 5. The system according to claim 574, the diagnostic AI processor processes the image and/or the medical result to obtain the report in: less than about ten minutes, less than about 9 minutes, less than about 8 minutes, less than about 7 minutes, less than about 6 minutes, less than about 5 minutes, less than about 4 minutes, less than about 3 minutes, less than about 2 minutes, or less than about 1 minute, and the system further comprises a device to display the generated report.

~~59. The system according to claim 56 further comprises a device to display the generated report.~~

60. 6. A method for diagnosing a presence of a disease or a condition in at least one image of a subject, the method comprising:

classifying the image to at least one body region, labelling, cropping, and orientating the image to obtain at least one classified, labeled, cropped, and oriented sub-image;

directing the classified sub-image to at least one artificial intelligence (AI) processor for processing and obtaining an evaluation result, and comparing the evaluation result to a database library having a plurality of evaluation results and a matched written templates or at least one dataset cluster to obtain at least one cluster result;

measuring the distance between the cluster result and the evaluation result to obtain at least one cluster diagnosis; and

assembling the cluster diagnosis and the matched written templates to obtain a report and displaying the report to a radiologist thereby identifying and diagnosing the presence of the disease or the condition in the subject.

~~61.~~ 7. The method according to claim ~~60~~ further comprising after displaying, analyzing the report and confirming the presence of the disease or the condition.

~~62.~~ 8. The method according to claim ~~61-7~~ further comprising optionally editing the written templates.

~~63.~~ 9. The method according to claim ~~60~~, wherein the method of obtaining the report has a process time: less than about 10 minutes, less than about 5 minutes, less than about 2 minutes, or less than about 1 minute.

~~64.~~ — The method according to claim ~~60~~, wherein the method of obtaining the report has a process time: ~~less than about 10 minutes, less than about 7 minutes, or less than about 6 minutes.~~

~~65.~~ 10. The method according to claim ~~60~~, processing the sub-image further comprises training the AI processor for diagnosing the presence of the disease or the condition in the image of the subject.

~~66.~~ 11. The method according to claim ~~65~~10, training the AI processor further comprises:
communicating a library of training images to the AI processor;
choosing a training image having the disease or the condition from the library of training images; and
comparing the training image to the library of training images thereby training the AI processor.

~~67.~~ 12. The method according to claim ~~66~~11, the library of training images comprises positive control training images and negative control training images.

~~68.~~ 13. The method according to claim ~~67~~12, the positive control training images have the disease or the condition of the training image.

69. [14.](#) The method according to claim [1267](#), the negative control training images do not have the disease or the condition of the training image.

70. [15.](#) The method according to claim [6611](#), the library of training images further comprises at least one of medical data, metadata, and auxiliary data.