

What is claimed is:

1. A system configured for determining skin conditions from images uploaded to a skin condition classification application that are processed within the skin condition classification application or uploaded to a server, the system comprising:

one or more hardware processors configured by machine-readable instructions to:

store one or more datasets of skin condition images, wherein the skin condition images are associated with one or more skin conditions as determined by human experts;

train a visual classifier model with the one or more datasets of the skin condition images;

receive, via a user interface of the skin condition classification application, one or more uploaded images;

pass the uploaded images through a visual classifier model to determine a context of the uploaded images;

generate an output of the visual classifier model representing predicted probabilities that the uploaded images exhibits one or more skin condition classes;

determine a set of predictions for the skin condition classes;

display the set of predictions that the uploaded images exhibit on a computer display via the user interface;

display information about the set of predictions; and

display exemplar skin disease images of the set of predictions or skin disease that are similar to the uploaded images.

2. The system of claim 1, wherein:

the one or more datasets of validated images of skin conditions is generated by generating a queue of images to be presented to the human experts,

the one or more datasets of validated images of skin conditions is generated by presenting a second image to a predetermined number of the human experts via the user interface,

the one or more datasets of validated images of skin conditions is generated by receiving and storing labels and corresponding probabilities for the image from human experts,

the one or more datasets of validated images of skin conditions is generated by combining the reviews made by multiple human experts, and

the one or more hardware processors are further configured by machine-readable instructions to remove the image from the queue and store the labels and corresponding probabilities with the image.

3. The system of claim 2, wherein:

presenting the image includes presenting the image via one or more user interfaces, and

presenting the image includes providing a set of user interface display elements prompting the human expert to input whether the image meets the required parameters, appears to be of healthy skin, displays diseased skin and the probabilities of specified skin diseases, is a poor quality image, or a measure of the probability that the human expert does not know how to correctly label the image.

4. The system of claim 1, wherein:

the step of determining whether the image meets a stored set of required parameters will consider an image and additional user supplied information in a multi-gate module, and

the step of passing the uploaded image through the multi-gate module, where the multi-gate module may incorporate a visual classifier, comprises, in response to determining that the image meets the required parameters, generating an output that directs the image to modality specific modules or indicates the image does not meet the required parameters.

5. The system of claim 1, wherein the one or more datasets of validated images of skin conditions comprising of labeled images mapped to an ontology which maintains relationships between dermatological conditions, the ontology comprising nodes representing skin conditions, which have parent-child relationships, the method further

comprising linking related skin conditions with broader labels to specific, situational disease labels.

6. The system of claim 5, wherein the one or more hardware processors are further configured by machine-readable instructions to organize the datasets into a data structure comprising a hierarchical structure.

7. The system of claim 1, wherein the one or more hardware processors are further configured by machine-readable instructions to:
present a user interface through which an administrative user can create and manage image review tasks.

8. The system of claim 1, wherein expert reviews of the uploaded image are combined and provided to the user that uploaded the uploaded image in order for the user to receive the set of conditions that exist with the uploaded image based on the opinion of multiple experts.

9. The system of claim 1, wherein the uploaded image of the portion of the user's skin is provided by a third party application, wherein the third party application comprises a telehealth or telemedicine application.

10. The system of claim 1, wherein the exemplar skin disease images of the set of predictions or skin disease that are similar to the uploaded images are identified based on a similarity metric.

11. The system of claim 1, wherein the one or more hardware processors are further configured by machine-readable instructions to:
invoke a question module that selects and presents queries based on the predicted probabilities and confidence levels for the uploaded images;
receive responses to the queries via the user interface; and
iteratively present queries and refine the predicted probabilities based on the received responses.

12. A method for determining skin conditions from images uploaded to a skin condition classification application that are processed within the skin condition classification application or uploaded to a server, the method comprising:

- storing one or more datasets of skin condition images, wherein the skin condition images are associated with one or more skin conditions as determined by human experts;
- training a visual classifier model with the one or more datasets of the skin condition images;
- receiving, via a user interface of the skin condition classification application, one or more uploaded images;
- passing the uploaded images through a visual classifier model to determine a context of the uploaded images;
- generating an output of the visual classifier model representing predicted probabilities that the uploaded images exhibits one or more skin condition classes;
- determining a set of predictions for the skin condition classes;
- displaying the set of predictions that the uploaded images exhibit on a computer display via the user interface;
- displaying information about the set of predictions; and
- displaying exemplar skin disease images of the set of predictions or skin disease that are similar to the uploaded images.

13. The method of claim 12, wherein:

- the one or more datasets of validated images of skin conditions is generated by generating a queue of images to be presented to the human experts,
- the one or more datasets of validated images of skin conditions is generated by presenting a second image to a predetermined number of the human experts via the user interface,
- the one or more datasets of validated images of skin conditions is generated by receiving and storing labels and corresponding probabilities for the image from human experts,

the one or more datasets of validated images of skin conditions is generated by combining the reviews made by multiple human experts, and

the one or more hardware processors are further configured by machine-readable instructions to remove the image from the queue and store the labels and corresponding probabilities with the image.

14. The method of claim 13, wherein:

presenting the image includes presenting the image via one or more user interfaces, and

presenting the image includes providing a set of user interface display elements prompting the human expert to input whether the image meets the required parameters, appears to be of healthy skin, displays diseased skin and the probabilities of specified skin diseases, is a poor quality image, or a measure of the probability that the human expert does not know how to correctly label the image.

15. The method of claim 12, wherein:

the step of determining whether the image meets a stored set of required parameters will consider an image and additional user supplied information in a multi-gate module, and

the step of passing the uploaded image through the multi-gate module, where the multi-gate module may incorporate a visual classifier, comprises, in response to determining that the image meets the required parameters, generating an output that directs the image to modality specific modules or indicates the image does not meet the required parameters.

16. The method of claim 12, wherein the one or more datasets of validated images of skin conditions comprising of labeled images mapped to an ontology which maintains relationships between dermatological conditions, the ontology comprising nodes representing skin conditions, which have parent-child relationships, the method further comprising linking related skin conditions with broader labels to specific, situational disease labels.

17. The method of claim 16, wherein the one or more hardware processors are further configured by machine-readable instructions to organize the datasets into a data structure comprising a hierarchical structure.

18. The method of claim 12, wherein the one or more hardware processors are further configured by machine-readable instructions to:

present a user interface through which an administrative user can create and manage image review tasks.

19. The method of claim 12, wherein expert reviews of the uploaded image are combined and provided to the user that uploaded the uploaded image in order for the user to receive the set of conditions that exist with the uploaded image based on the opinion of multiple experts.

20. A non-transient computer-readable storage medium having instructions embodied thereon, the instructions being executable by one or more processors to perform a method for determining skin conditions from images uploaded to a skin condition classification application that are processed within the skin condition classification application or uploaded to a server, the method comprising:

storing one or more datasets of skin condition images, wherein the skin condition images are associated with one or more skin conditions as determined by human experts;

training a visual classifier model with the one or more datasets of the skin condition images;

receiving, via a user interface of the skin condition classification application, one or more uploaded images;

passing the uploaded images through a visual classifier model to determine a context of the uploaded images;

generating an output of the visual classifier model representing predicted probabilities that the uploaded images exhibits one or more skin condition classes;

determining a set of predictions for the skin condition classes;

displaying the set of predictions that the uploaded images exhibit on a computer

display via the user interface;

- displaying information about the set of predictions; and
- displaying exemplar skin disease images of the set of predictions or skin disease that are similar to the uploaded images.