Dog Hip Norberg Angle Measurement Software

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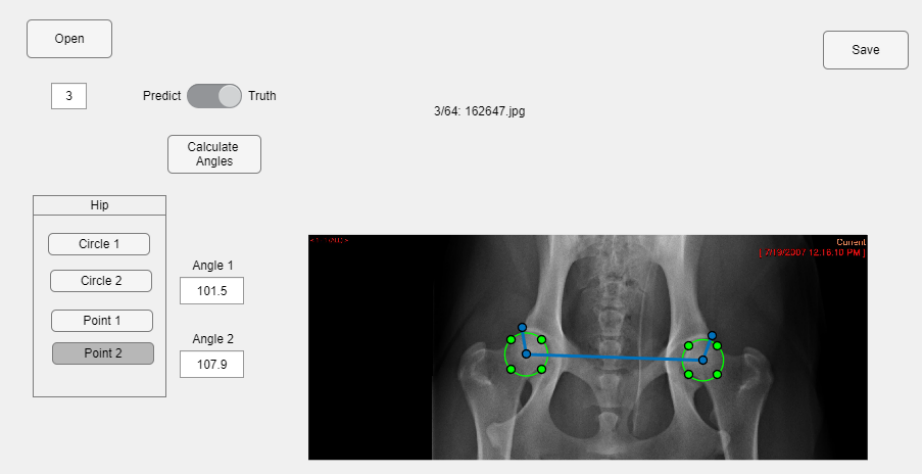

Fig. 1: The interface of our developed dog hip Norberg Angle analysis tool and an example of a labeled dog hip image. The green circles and blue colors are labeled areas. On the top of the image, "3/64": 3 is the current dog hip image number, and 64 is the total number of images. "162647.jpg" is the image name.

1 Dog hip analysis tool

Fig. 1 shows the interface of our proposed dog hip Norberg Angle analysis tool. This software is developed based on MATLAB 2022a and aims to analyze the Norberg Angle of dog hip. There are many supported functions in this tool. The order of the following explanation is from top to bottom and from left to right.

1. The "Open" button: we can select any dog hip image.
2. The edit text box: it will show the index number of the current image. "1" is the default initialization number. We can also directly change this number to jump to another image. The current number is 31 in Fig. 1.
3. In the switch radio button box: it supports the switch between "Truth" and "Predict". The "Truth" is the labeled points, and the "Predict" is the predicted points from any model (correctly, we haven't built any model yet.). Hence, we can compare the differences between human-labeled points and predicted labels from deep learning models.

4. In the select "Hip" box groups: once we click the "Circle 1" button, we can draw a circle in the left hip area (it should be the right of the image itself). We can draw another circle on the right hip by clicking the "Circle 2" button. If we click "Point 1", we can draw a line from the center of Circle 1 to the boundary of the left bone. If we click "Point 2", we can draw a line from the center of Circle 2 to the boundary of the right bone. We need to pay attention to the points of two bone boundaries; the center points will be automatically adjusted in the "Calculate Angles" button.
5. The "Calculate Angles" button: once we click the button, it will calculate the left ("Angle 1") and right angles ("Angle 2"). It will automatically adjust the start points to the two centers in "Point 1" and "Point 2".
6. The "Angle 1" and "Angle 2" text boxes: will directly show the calculated two angles. Angle 1 = 101.5 and Angle 2 = 107.9 in Fig. 1.
7. Image information area: it will demonstrate the current image number, total image number, and image name, e.g., "3/64:162647.jpg".
8. Image shown area: it will show the dog heart image with its drawn circles and lines
9. The "Save" button, we can save the labeled points in a "Labels" folder.