Dog Heart Vertebral Heart Scale (VHS) Measurement Software

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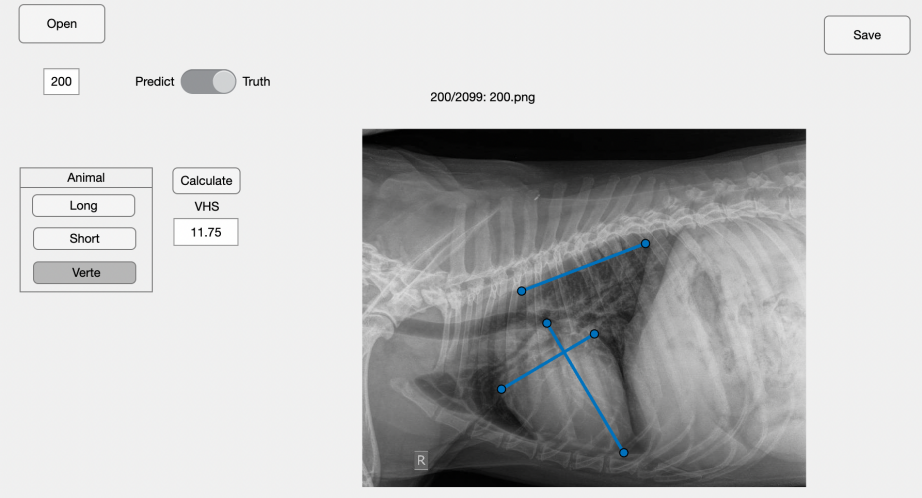

Fig. 1: The interface of our developed dog hip Norberg Angle analysis tool and an example of a labeled dog hip image. The green circles and blue colors are labeled areas. On the top of the image, "200/2099": 200 is the current dog hip image number, and 64 is the total number of images. "200.png" is the image name.

1 Dog hip analysis tool

Fig. 1 shows the interface of our proposed dog hip Norberg Angle analysis tool[1]. This software is developed based on MATLAB 2022a and aims to analyze the vertebral heart scale (VHS) of dog heart. This tool has many supported functions. 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.

[1] Code and more details can be found at `https://github.com/YoushanZhang/Dog-Heart-Vertebral-Heart-Size-VHS--Measurement-Software`

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. Hence, we can compare the differences between human-labeled points and predicted labels from deep learning models.
4. In the select “Animal” box groups: once we click the “Long” button, we can draw a line from the ventral margin of the Corina to the apex (the bottom part of the heart). This line is named ”L”.
5. Next, we can click on the ”Short” button to draw a line from the left part of the heart to the ventral margin of the caudal vena cava (the right of the heart). This line is named ”S”, which should be perpendicular to L. Once we click on the ”Calculate” button, the line S will automatically be adjusted to be perpendicular to L;
6. After next, We can click on the ”Verte” button to draw a line from the fourth vertebral body on the spine (T4) to the ninth vertebral body (T9), which has six lengths of the vertebral body, and this line is named ”T”.
7. Finally, we can click on the ”Calculate” button to calculate the VHS score, which is VHS = 6 *(L + S)/T. The line S will also automatically be adjusted to be perpendicular to L;
8. The “AVHS” text boxes will directly show the calculated VHS score as 11.75 as in Fig. 1.
9. Image information area: it will demonstrate the current image number, total image number, and image name, e.g., “200/2099:200.png”.
10. Image shown area: it will show the dog heart image with its drawn lines.
11. The “Save” button, we can save the labeled points in a “Saved” folder.