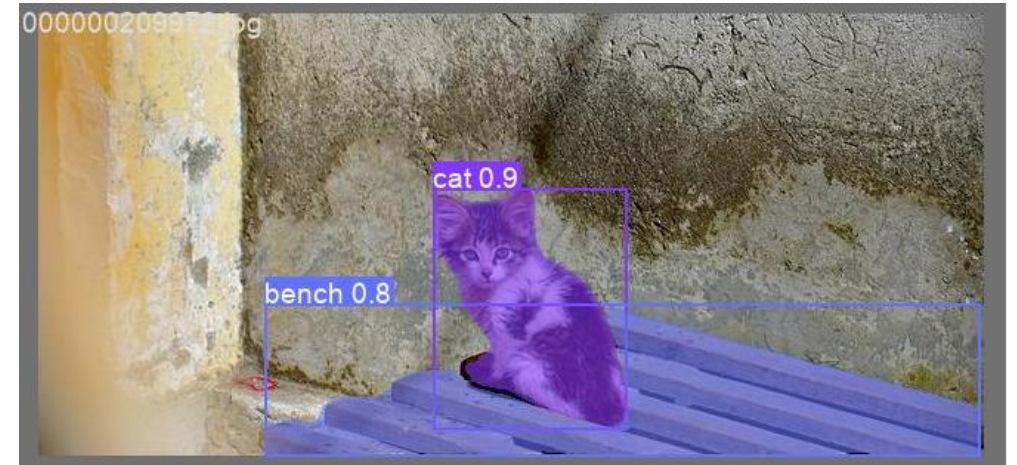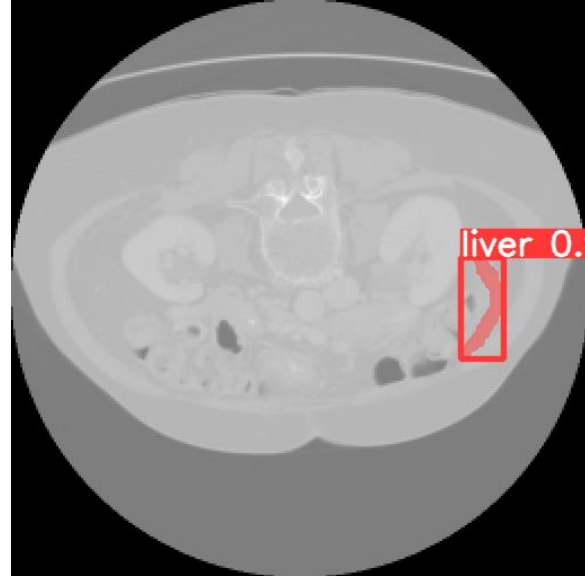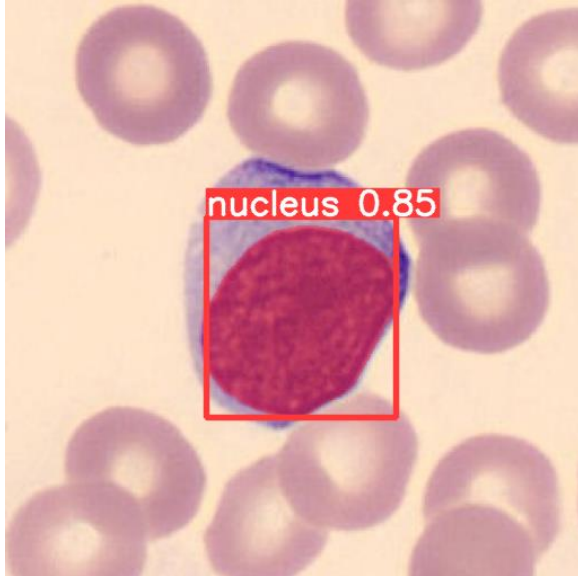# YOLOv7Seg

YOLOv7 is the most powerful object detection algorithm now. We also can use it to do instance segmentation instead of Mask R-CNN. After integrating YOLOv7Seg into an APP, it is more convenient for everyone to use it quickly.

Version 20230223

Applications

YOLOv7Seg can be applied to factory defect detection, medical image analysis, biological image analysis, industrial security image analysis, mask image analysis, etc.

How to use

The main process is:

Select dataset -> preprocessing (prepare images, label images, prepare files for training, set training parameters) -> training -> inference images

Select dataset

Select the dataset to train or infer.

- The "Folder" icon button next to the pull-down menu can open the data folder location, which is convenient for users to confirm and modify.

- If you want to create a new dataset by yourself, please press the "New" button, enter the dataset name in the pop-up window (only English and numbers can be used as the dataset name), and press "OK" to complete the creation, that is The name you just entered can be found in the pull-down menu.
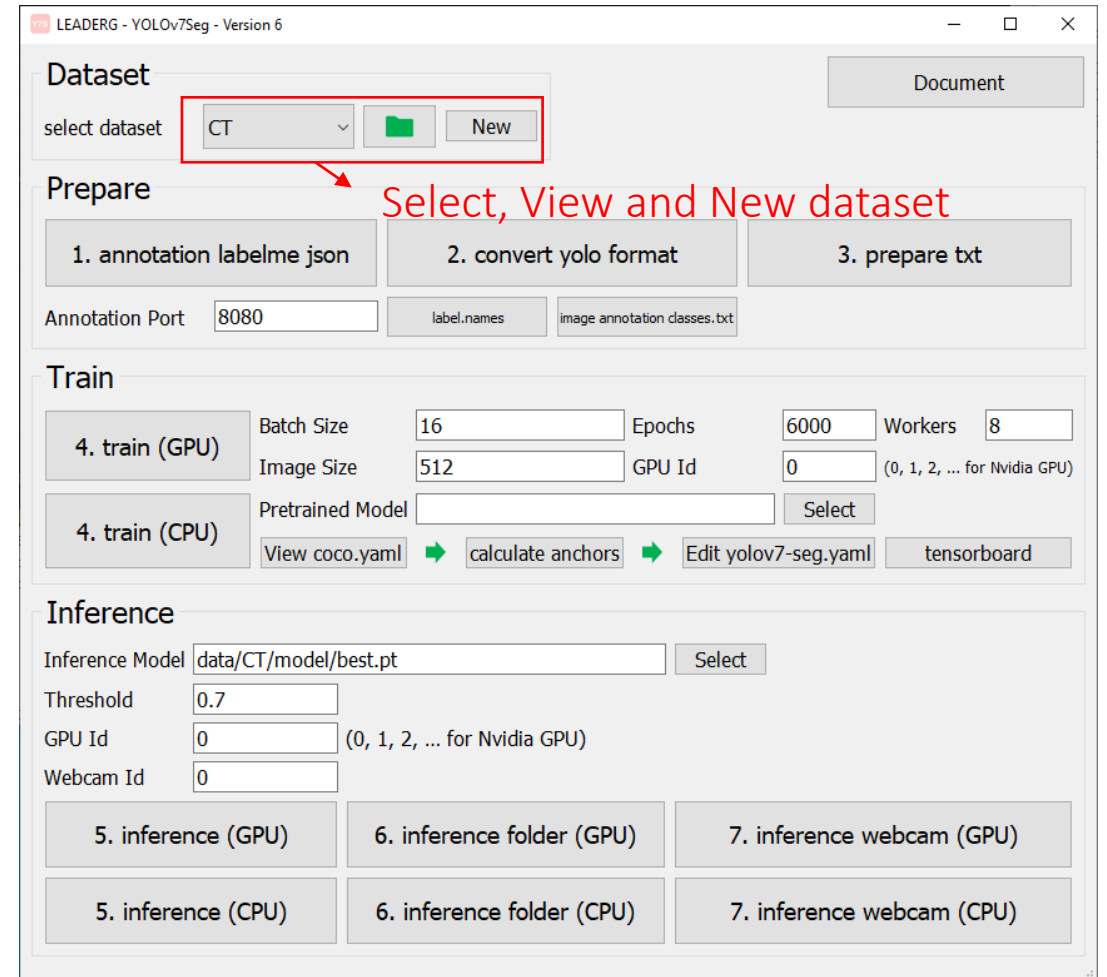
Prepare images

- After pressing the "folder" icon button, click the name of the dataset to be used, and put the PNG images you want to train and infer in the images folder of the train, val, and test folders. The images in the train folder must be at least 9.

- Please add "name to be marked-XXX file name" in front of the training, validation and test image files you put in, such as "nucleus-1.png".

- It is recommended to zoom or crop the training and validation image files to a square image of approximately 512 x 512 size. The zoomed and cropped part of the image can be zoomed and cropped on the annotation page opened by "1.annotation labelme json".
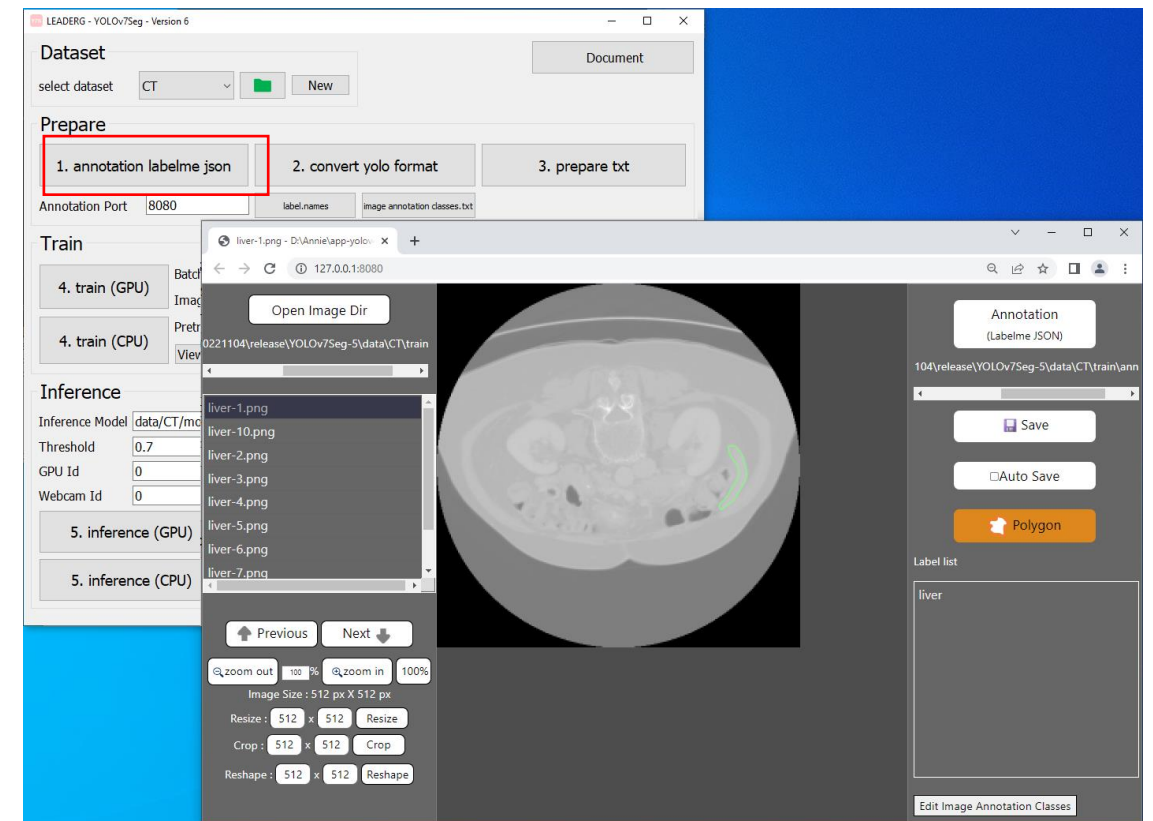
1. Annotation labelme json

After running, it will open the annotation webpage for image annotation.Currently, only image formats with file extension .png is supported, and images can be cropped, resized, and labeled.

Note:

Both training and validation images need to be annotated. To switch to annotated validation images, please press "Open Image Dir" at the top left to select "your dataset/val/images", then press "SELECT", then press Under "Annotation" in the upper right, select "Labelme JSON" and then select "your dataset/val/annotations" and then press "SELECT".

See Annotation.pdf for how to use annotation pages.

2.convert yolo format

After confirming that the category names in the label.names file are correct, you can press the button to convert the labelme json annotation file to yolo format.
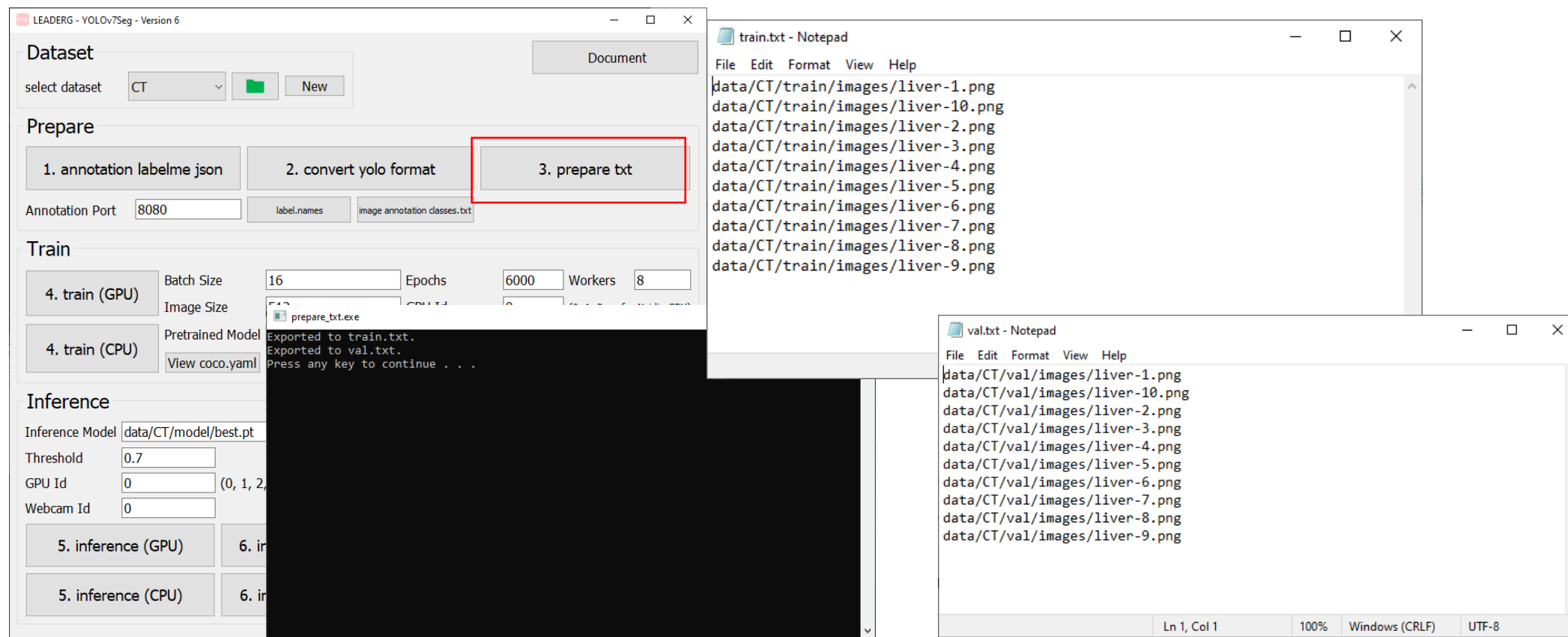
You can press [label.names] to edit the category names. The format uses a newline to distinguish multiple categories.

[image annotation classes.txt] is the category name used when the annotation webpage.
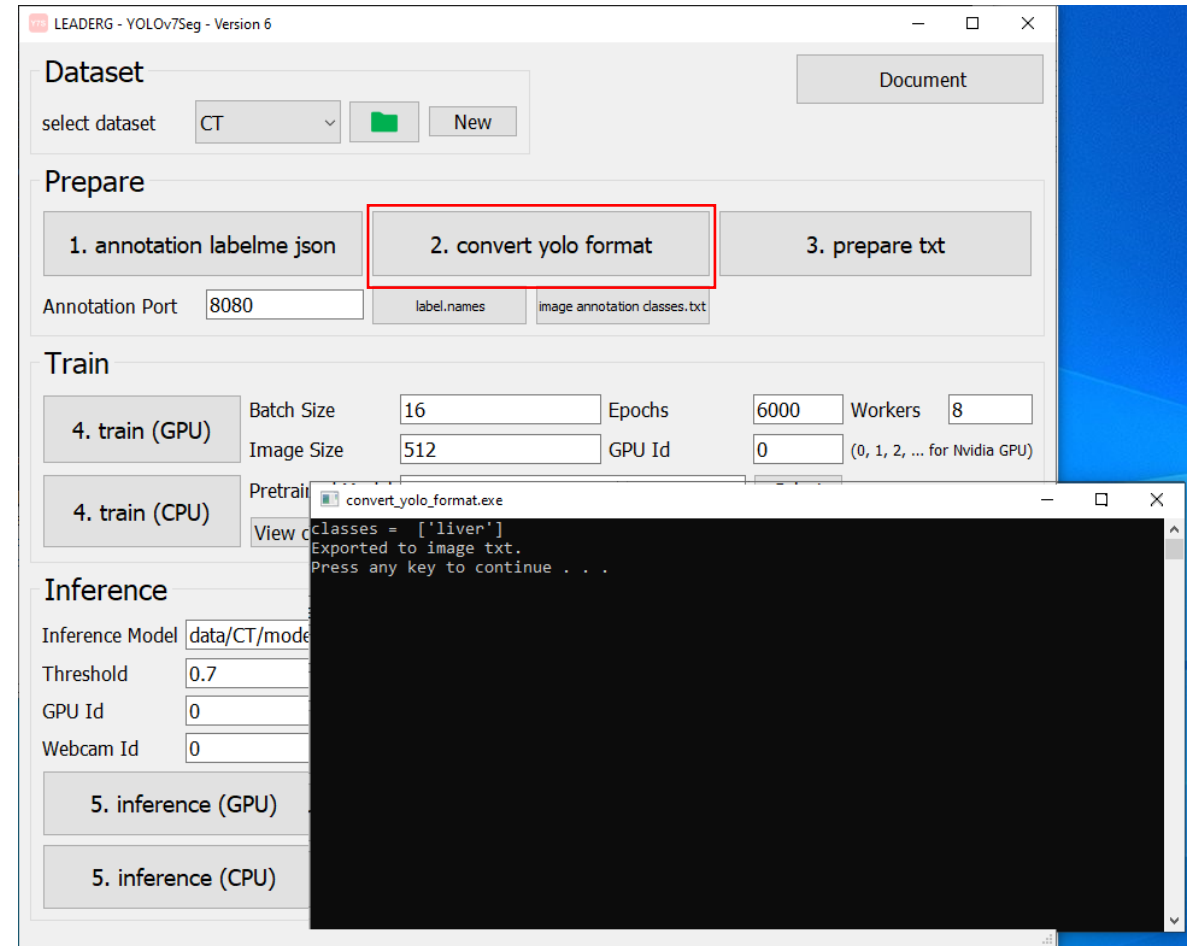
3.prepare txt

Generate training image path files "train.txt" and "val.txt".

Set yolov7-seg.yaml parameters

Press [calculate anchors] to calculate the anchor point value suitable for your dataset. Before running, please confirm [label.names] and whether the category filled in the content is correct. Then press [edit yolov7-seg.yaml] to set the number of categories and anchor points. The number of categories must be the same as coco.yaml. The value of the anchor point is a group of six numbers. Divide into three groups and fill in the 18 numbers in the red box into the anchors in parentheses.
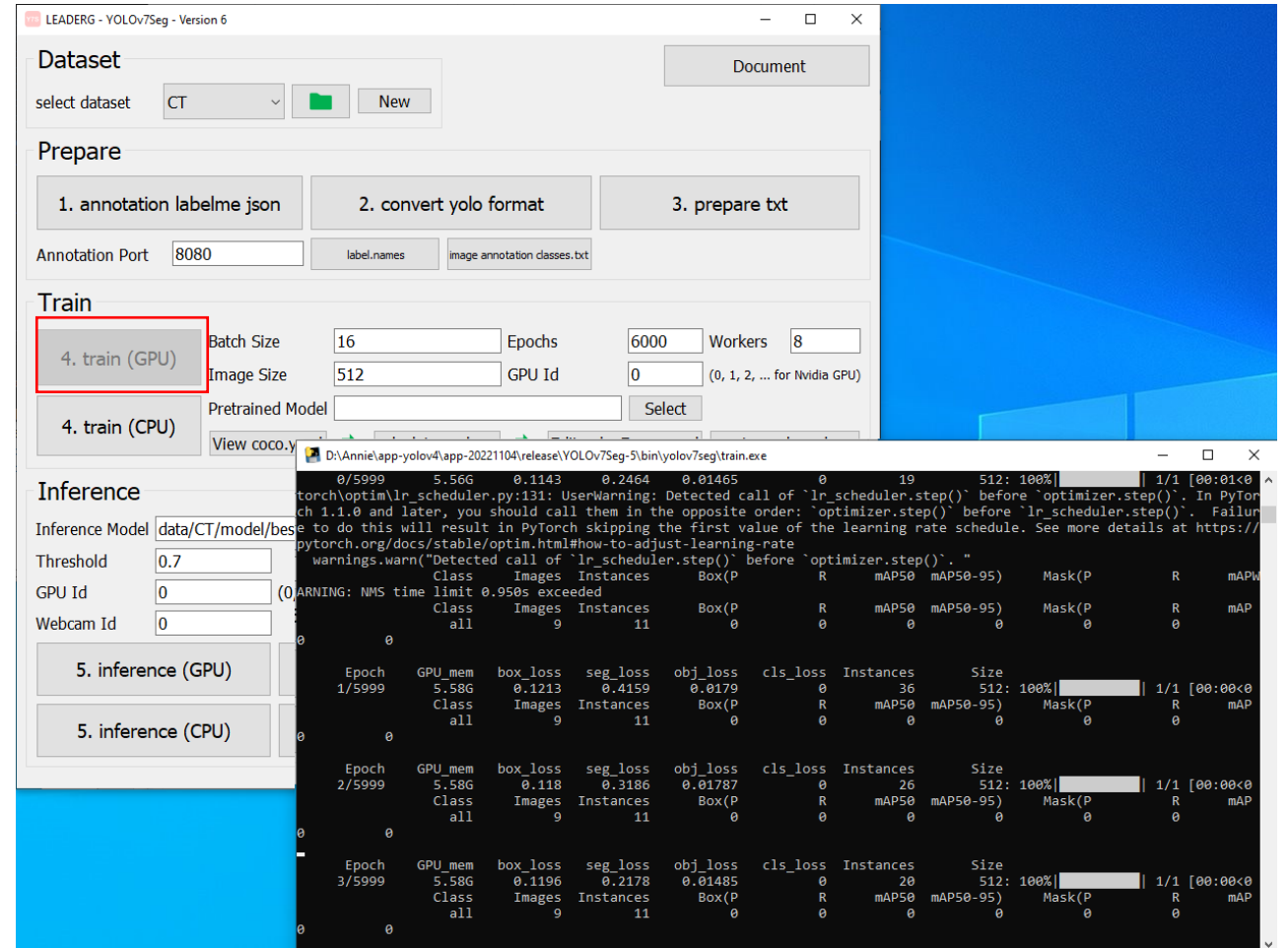
4. Train (GPU)
4. Train (CPU)

Start training.

Note:

pretrained model is the pretrained model path used, None means not to use the pretrained model for training.

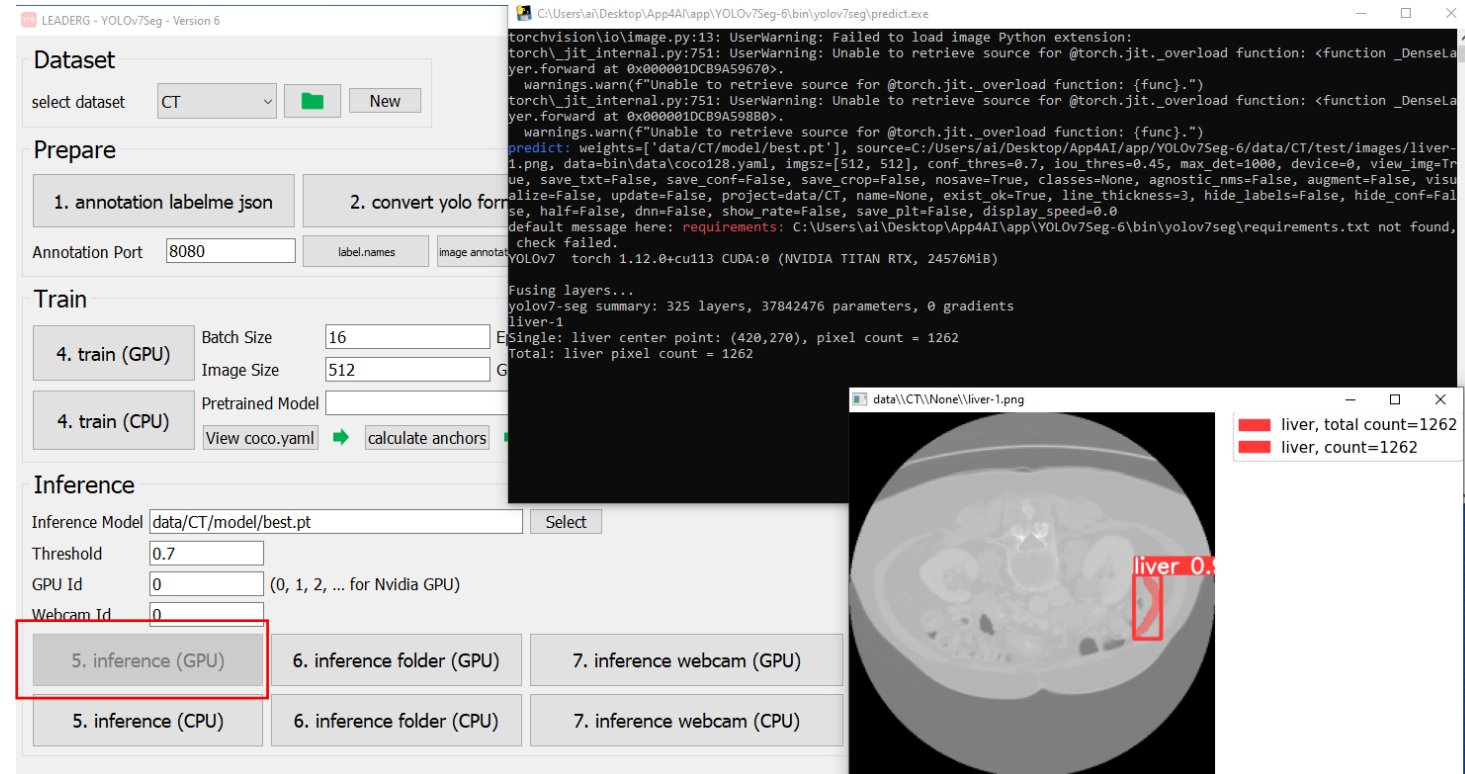epochs is the number of training epochs.

5. Inference (GPU)
5. Inference (CPU)

Infer a single image.
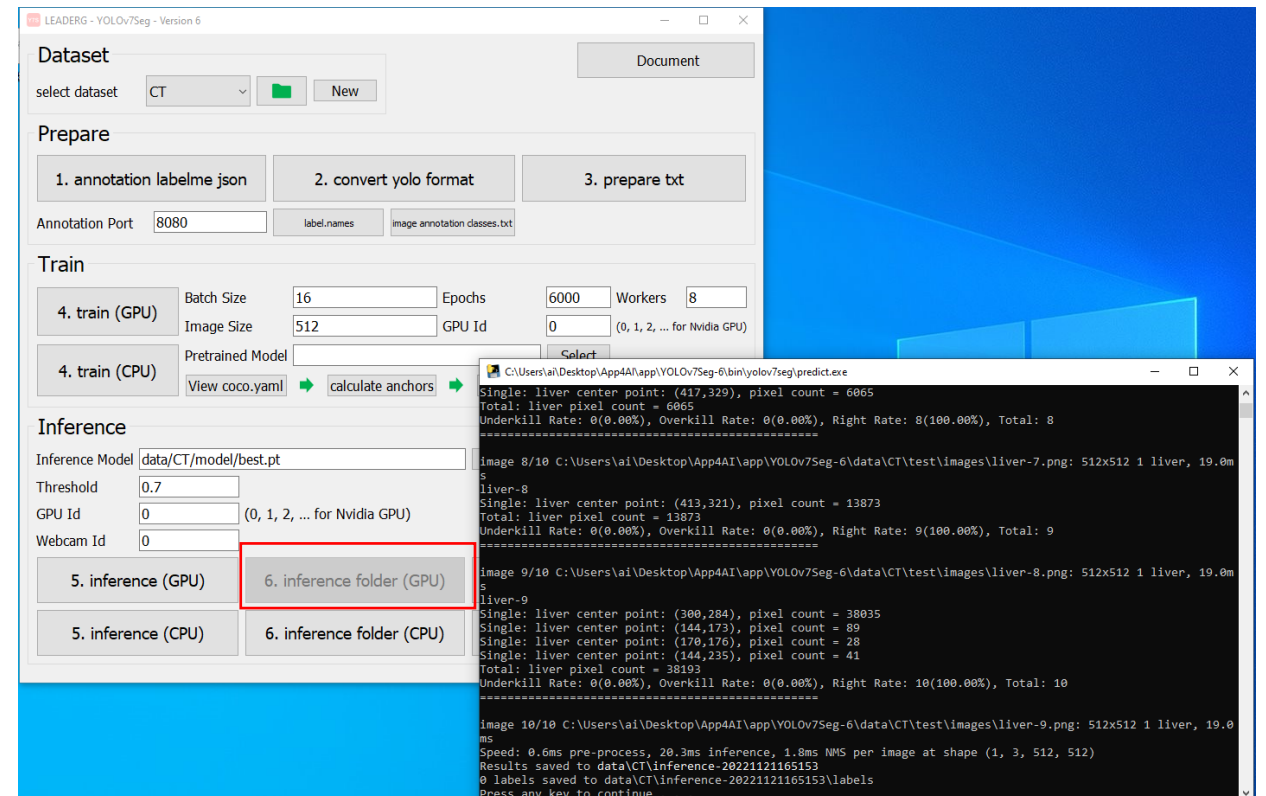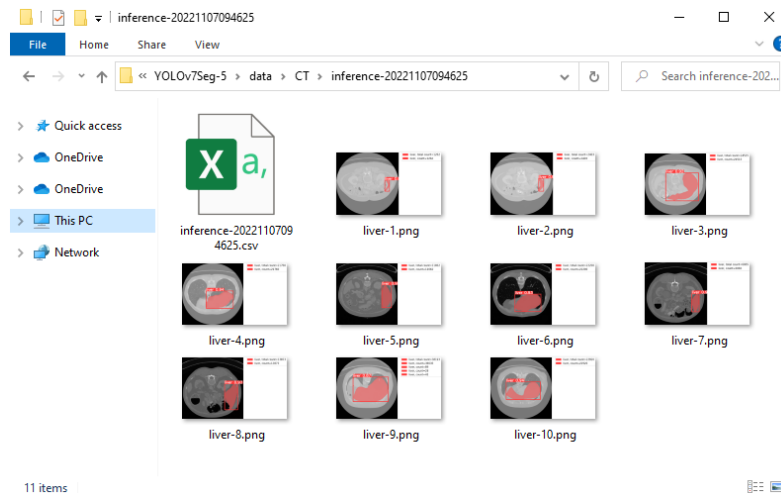
Choose the Inference Model yourself.

6. inference folder (GPU)
6. inference folder (CPU)

Infer all images in the folder.

Choose the Inference Model yourself.

Coordinate information and image results are stored in the "inference-XXX" folder.
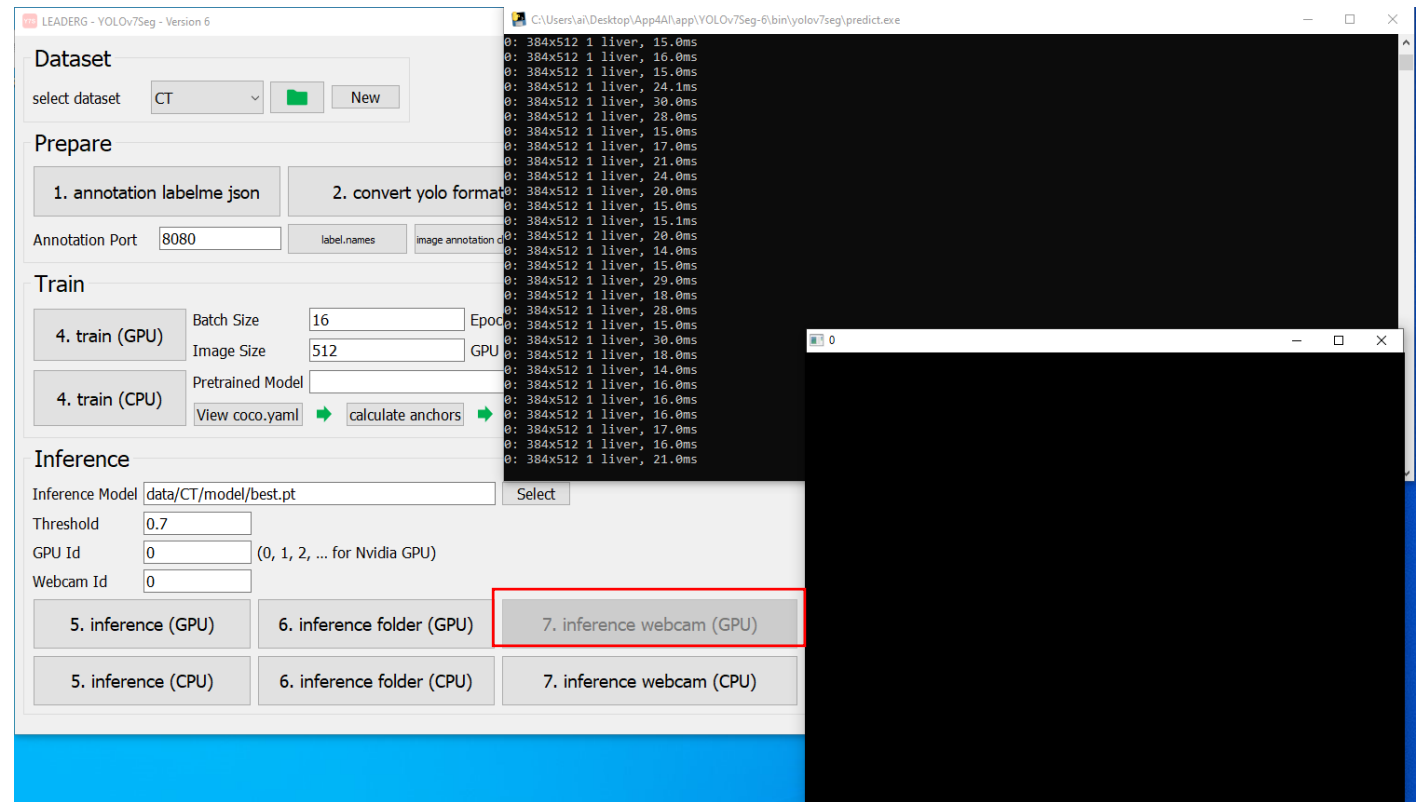
7. inference webcam (GPU)
7. inference webcam (CPU)

Infer the image of the webcam.

The Webcam Id parameter can set the specified webcam.

Choose the Inference Model yourself.

Reference

- Please refer to the readme.txt in the APP folder.
- LEADERG AppForAI: https://www.leaderg.com/appforai-windows
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