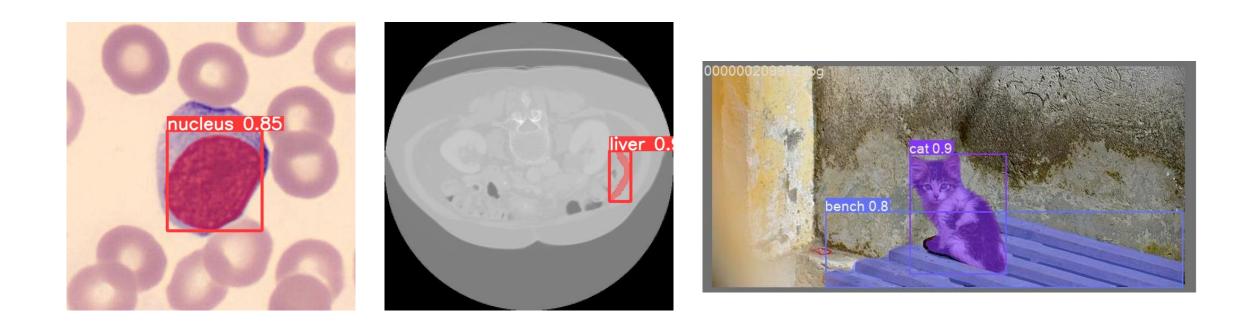
## YOLOv7Seg

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

CT select dataset New Prepare 1. annotation labelme json 2. convert yolo format 3. prepare txt Annotation Port 8080 label.names image annotation classes.txt Train 6000 Workers 8 Batch Size 16 Epochs 4. train (GPU) 512 Image Size GPU Id 0 (0, 1, 2, ... for Nvidia GPU Select Pretrained Model 4. train (CPU) View coco.yaml calculate anchors 🔶 Edit yolov7-seg.yaml tensorboard Inference Inference Model data/CT/model/best.pt Select Threshold 0.7 0 GPU Id (0, 1, 2, ... for Nvidia GPU) 0 Webcam Id 5. inference (GPU) 6. inference folder (GPU) 7. inference webcam (GPU) 5. inference (CPU) 6. inference folder (CPU) 7. inference webcam (CPU)

LEADERG - YOLOv7Seg - Version 6

Dataset

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Document

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### 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.

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5. inference (CPU)			<mark>6.</mark> i	6. inference folder (CPU)			7. inference webcam (CPU)				

### 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".

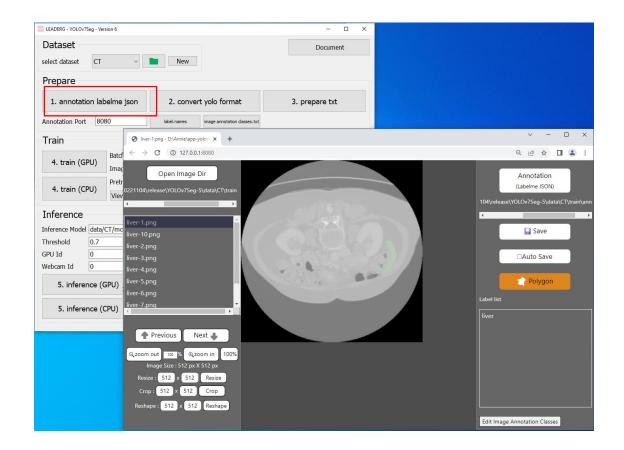
## 1. Annotation labelme json

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.

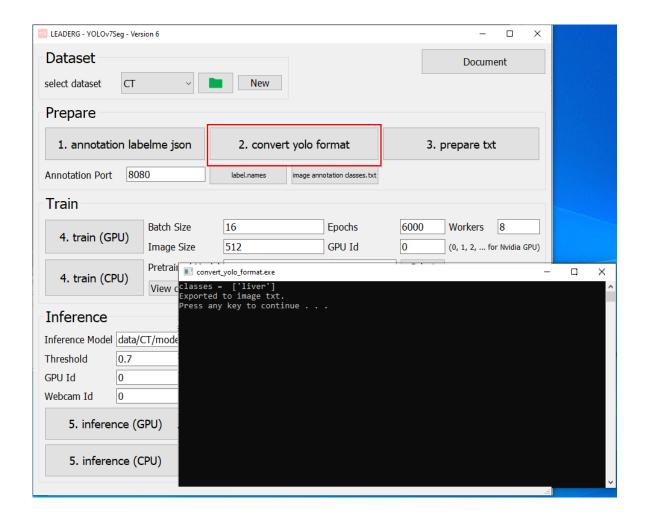


## 2.convert yolo format

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.



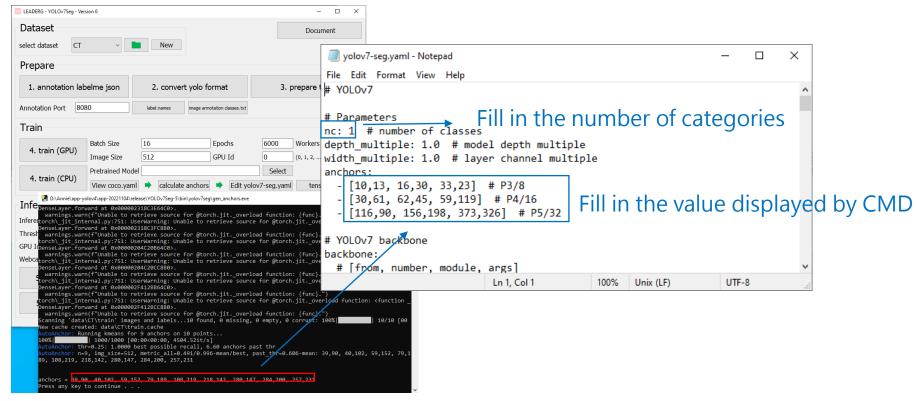
## 3.prepare txt

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

ELADERG - VOLOv7Seg - Version 6	- 🗆 X	Train.txt - Notepad		×
Dataset	Document	File Edit Format View Help		
select dataset CT V New		data/CT/train/images/liver-1.png		^
Prepare		<pre>data/CT/train/images/liver-10.png data/CT/train/images/liver-2.png</pre>		
1. annotation labelme json 2. convert yolo format	3. prepare txt	<pre>data/CT/train/images/liver-3.png data/CT/train/images/liver-4.png data/CT/train/images/liver-5.png</pre>		
Annotation Port 8080 label.names image annotation classes.txt		data/CT/train/images/liver-6.png		
4. train (GPU)     Batch Size     16     Epochs     60       Image Size     12     000000000000000000000000000000000000	00 Workers 8	<pre>data/CT/train/images/liver-7.png data/CT/train/images/liver-8.png data/CT/train/images/liver-9.png</pre>		
4. train (CPU)       Pretrained Model       Exported to train.txt.         Exported to val.txt.       View coco.yaml       Press any key to continue		File Edit Format		×
Inference         Inference Model data/CT/model/best.pt         Threshold       0.7         GPU Id       0       (0, 1, 2, Webcam Id         5. inference (GPU)       6. ir         5. inference (CPU)       6. ir		data/CT/val/im data/CT/val/im data/CT/val/im data/CT/val/im data/CT/val/im data/CT/val/im data/CT/val/im data/CT/val/im	<pre>mages/liver-10.png mages/liver-2.png mages/liver-3.png mages/liver-4.png mages/liver-5.png mages/liver-6.png mages/liver-7.png mages/liver-8.png mages/liver-9.png</pre>	
		~	Ln 1, Col 1 100% Win	dows (CRLF) UTF-8

## 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.



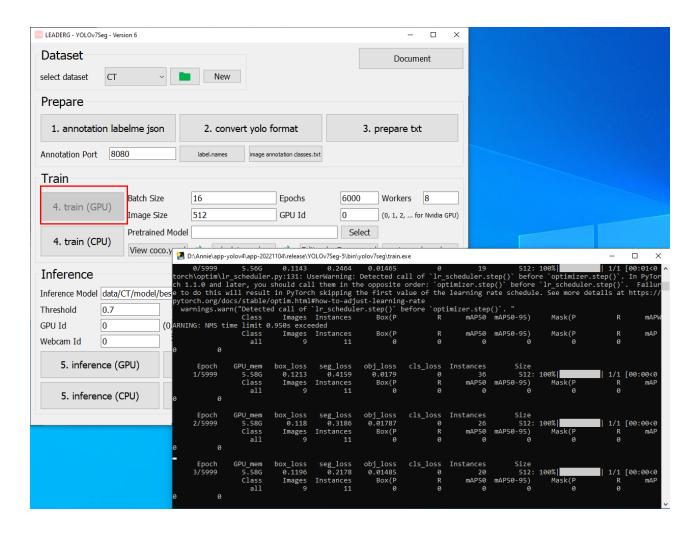
# 4. Train (GPU)4. Train (CPU)

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.

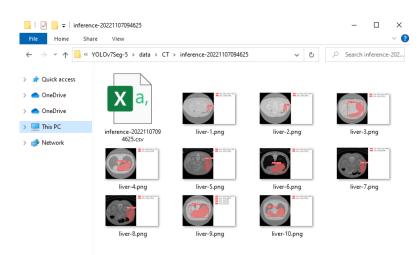
Dataset       convision (io)(iage.pr):13: UserNaming: inable to retrieve source for @torch.jtr.overload function: <function: <="" <function:="" tu=""></function:>	🚾 LEADERG - YOLOv7Seg - Version 6	C:\Users\ai\Desktop\App4Al\app\YOLOv7Seg-6\bin\yolov7		- 🗆 X
1. annotation labelme json       2. convert yolo formalizer-alse, update-false, protect-date/CT, name=hone, exist_oksTrue, line_thickness=3, hTde_labels=False, htde_conf-Fal         Annotation Port       8080       Woelnames       mage smaller (Chick falled)         Annotation Port       8080       Woelnames       mage smaller (Chick falled)         Train       Fusing layers       900/000/7-863 Summary: 325 layers, 37842476 parameters, 0 gradients         4. train (GPU)       Batch Size       16       E5         1. train (CPU)       Pretrained Model       Fusing layers         4. train (CPU)       Pretrained Model       Fusing layers         Inference       Inference       Iver of calculate anchors         Inference Model (data/CT/model/best.pt       Select         Threshold       0.7       (0, 1, 2, for Nvidia GPU)         Webcam Id       0       (0, 1, 2, for Nvidia GPU)         Webcam Id       0       7. inference webcam (GPU)       7. inference webcam (GPU)	select dataset CT V New	<pre>torch\_jit_internal_pyi751: UserWarning: Un yer.forward at 0x000001DCB9A59670&gt;. warnings.warn(f*Unable to retrieve source torch\_jit_internal.pyi751: UserWarning: Un yer.forward at 0x000001DCB9A50880&gt;. warnings.warn(f*Unable to retrieve source predict: weights=('data/CT/model/best.pt'), l.png, data=bin/data/ccoc128.yaml, imgsz=[5</pre>	<pre>able to retrieve source for @torch.jitoverload 4 e for @torch.jitoverload function: {func}.") able to retrieve source for @torch.jitoverload f e for @torch.jitoverload function: {func}.")     source=C:/Users/ai/Desktop/App4AI/app/VOL0v7Sege( i12, 512), conf_thres=0.7, iou_thres=0.45, max_det</pre>	− Function: <function _densela<br="">5/data/CT/test/images/liver- 1000, device-0, view_img=Tr</function>
Train       Full of a liver 1		<pre>alize=False, update=False, project=data/CT, se, half=False, dnn=False, show_rate=False, default message here: requirements: C:\User check failed.</pre>	name=None, exist_ok=True, line_thickness=3, hide_ save_plt=False, display_speed=0.0	_labels=False, hide_conf=Fal
Irain       yolov7-seg summary: 325 layers, 37842476 parameters, 0 gradients         4. train (GPU)       Batch Size       16         Image Size       512       G         Pretrained Model       Iver jixel count = 1262         Inference       View coco.yaml (iver.1png)         Inference       Select         Inference Model data/CT/model/best.pt       Select         Threshold       0.7         GPU Id       0         0       (0, 1, 2, for Nvidia GPU)         Webcam Id       0         5. inference (GPU)       6. inference folder (GPU)         7. inference webcam (GPU)       7. inference webcam (GPU)	Annotation Port 8080 label.names image annot	<sup>at</sup> YOLOv7 torch 1.12.0+cu113 CUDA:0 (NVIDIA T	TITAN RTX, 24576MiB)	
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	5. inference (CPU) 6. inference folder (CPU)	7. inference webcam (CPU)		

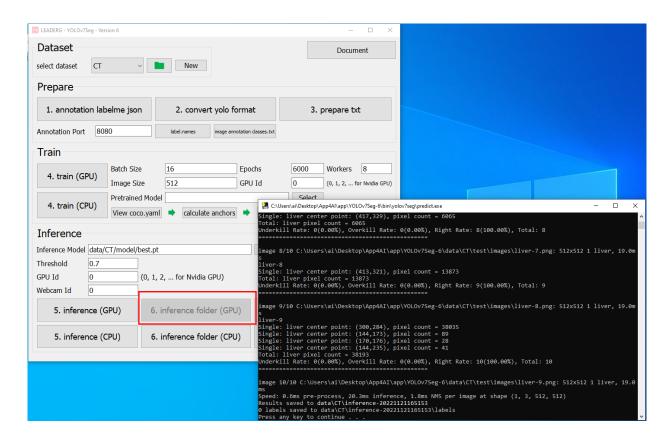
## 6. inference folder (GPU)6. inference folder (CPU)

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.

Dataset       384x512       1 I/ver, 15.0ms         select dataset       CT       Image Size       1 I/ver, 24.0ms         Prepare       384x512       1 I/ver, 24.0ms         1. annotation labelme json       2. convert yolo formate: 384x512       1 I/ver, 24.0ms         384x512       1 I/ver, 24.0ms         384x512       1 I/ver, 24.0ms         384x512       1 I/ver, 24.0ms         1. annotation labelme json       2. convert yolo formate: 384x512       1 I/ver, 24.0ms         384x512       1 I/ver, 24.0ms       384x512       1 I/ver, 24.0ms         384x512       1 I/ver, 24.0ms       384x512       1 I/ver, 24.0ms         384x512       1 I/ver, 21.0ms       384x512       1 I/ver, 24.0ms         384x512       1 I/ver, 21.0ms       384x512       1 I/ver, 24.0ms         384x512       1 I/ver, 24.0ms       384x512       1 I/ver, 20.0ms         384x512       1 I/ver, 21.0ms       384x512       1 I/ver, 20.0ms         384x512       1 I/ver, 21.0ms       384x512       1 I/ver, 20.0ms         384x512       1 I/ver, 15.0ms       384x512       1 I/ver, 20.0ms         384x512       1 I/ver, 16.0ms       384x512       1 I/ver, 16.0ms         384x512       1 I/ver, 16.0ms       384	
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1. annotation labelme json       2. convert yolo formate       0: 344x512 1 liver, 20.0ms         Annotation Port       8080       label.names       mage annotation         384x512 1 liver, 20.0ms       0: 384x512 1 liver, 20.0ms         0: 384x512 1 liver, 20.0ms       0: 384x512 1 liver, 20.0ms         0: 384x512 1 liver, 20.0ms       0: 384x512 1 liver, 20.0ms         0: 384x512 1 liver, 20.0ms       0: 384x512 1 liver, 20.0ms         0: 384x512 1 liver, 20.0ms       0: 384x512 1 liver, 20.0ms         0: 384x512 1 liver, 15.0ms       0: 384x512 1 liver, 30.0ms         0: 384x512 1 liver, 30.0ms       0: 384x512 1 liver, 30.0ms         0: 384x512 1 liver, 18.0ms       0: 384x512 1 liver, 18.0ms         0: 384x512 1 liver, 18.0ms       0: 384x512 1 liver, 18.0ms         0: 384x512 1 liver, 18.0ms       0: 384x512 1 liver, 18.0ms         0: 384x512 1 liver, 18.0ms       0: 384x512 1 liver, 18.0ms         0: 384x512 1 liver, 10.0ms       0: 384x512 1 liver, 10.0ms         0: 384x512 1 liver, 10.0ms       0: 384x512 1 liver, 10.0ms         0: 384x512 1 liver, 10.0ms       0: 384x512 1 liver, 10.0ms         0: 384x512 1 liver, 10.0ms       0: 384x512 1 liver, 10.0ms	
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4. train (GPU)       Batch Size       16       Epcode:       384x512 1 liver, 28.0ms         Mage Size       512       GPU       9:       384x512 1 liver, 18.0ms         4. train (CPU)       Pretrained Model       9:       384x512 1 liver, 14.0ms         View coco.yaml <ul> <li>Calculate anchors</li> <li>S84x512 1 liver, 16.0ms</li> <li>S84x512 1 liver, 16.0ms</li> <li>S84x512 1 liver, 16.0ms</li> <li>S84x512 1 liver, 17.0ms</li> <li>S84x512 1 liver, 21.0ms</li> <li>S84x512 1 liver</li></ul>	
4. train (CPU)       View coco.yaml	X
Interence Model Judd/C1/Inodel/Desc.pt	
Threshold         0.7           GPU Id         0         (0, 1, 2, for Nvidia GPU)           Webcam Id         0         (0, 1, 2, for Nvidia GPU)	
5. inference (GPU)     6. inference folder (GPU)     7. inference webcam (GPU)	
5. inference (CPU)     6. inference folder (CPU)     7. inference webcam (CPU)	

### Reference

- Please refer to the readme.txt in the APP folder.
- LEADERG AppForAI: <a href="https://www.leaderg.com/appforai-windows">https://www.leaderg.com/appforai-windows</a>
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