

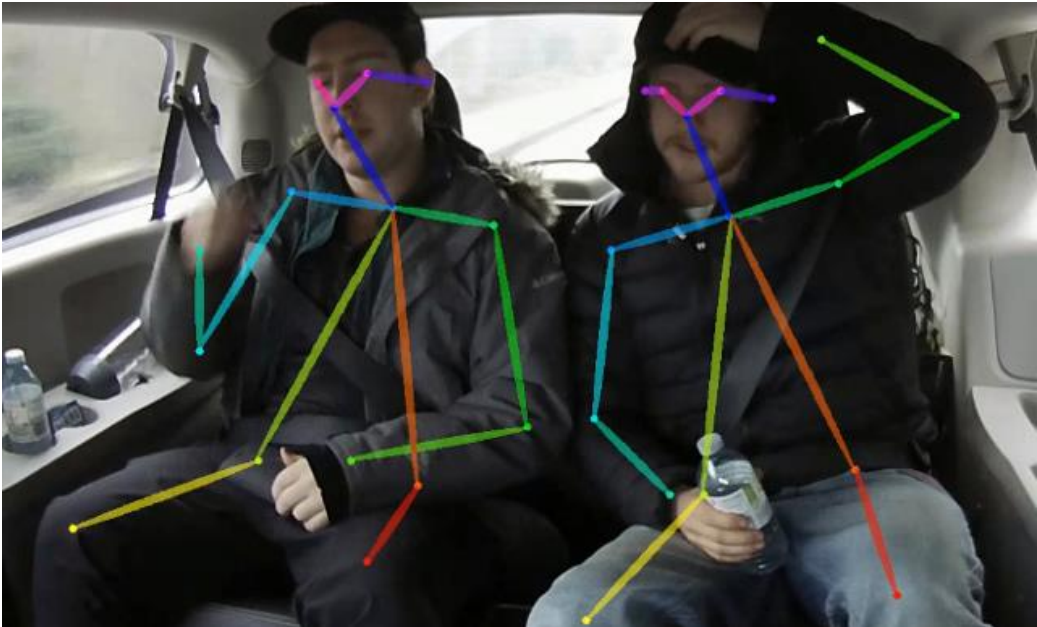
HumanPose

AI human posture detection, such as human skeleton detection, fall detection, people counting, etc. It can detect the position of human eyes, ears, nose, neck, shoulders, elbows, wrists, hips, knees, ankles.

Version 20230223

Applications

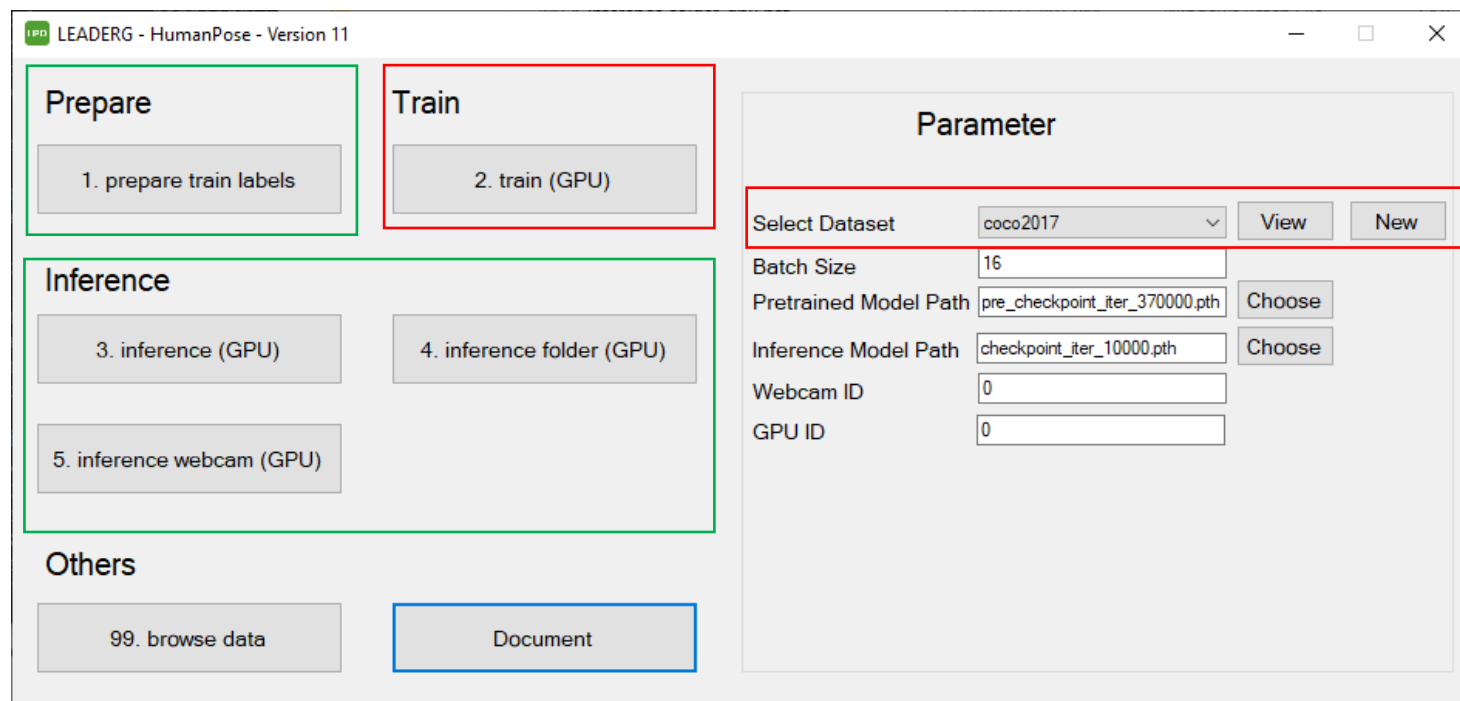
- HumanPose algorithms can be applied to medical image analysis, biological image analysis, advanced driver assistance systems, autonomous vehicle analysis, factory security systems, rehabilitation systems, etc.



How to use

The main process is:

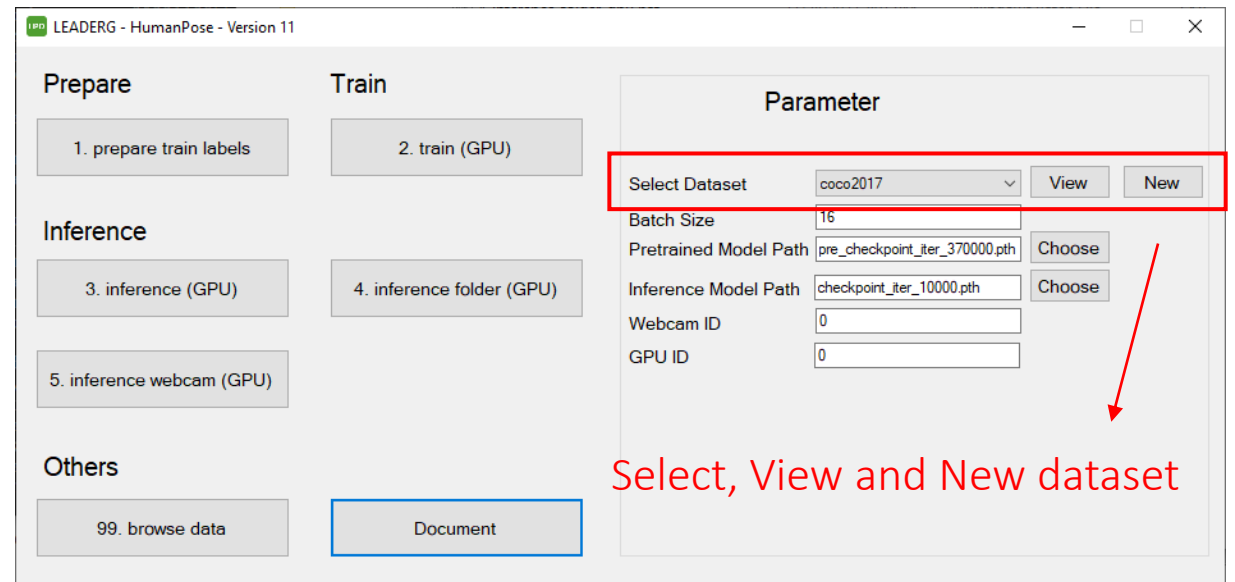
Select dataset -> preprocessing (prepare images, label images, generate training files) -> training -> inference images



Select dataset

Select the dataset to train or infer.

- The "View" 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.

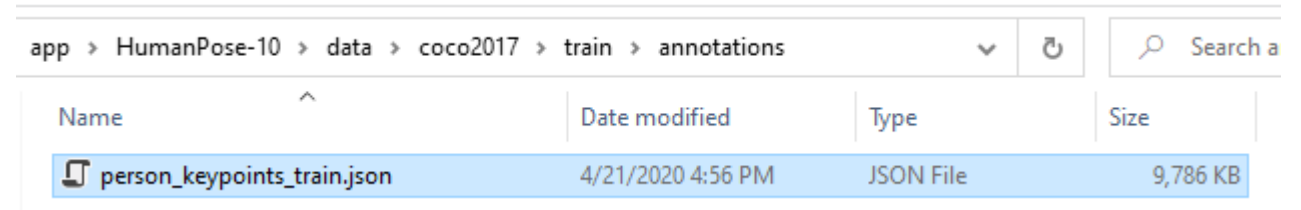


Preparing and labeling images

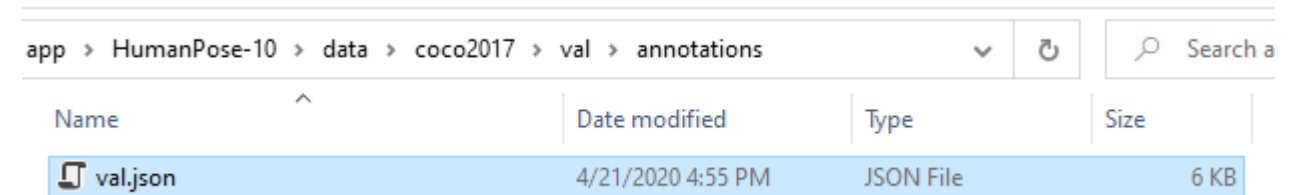
The dataset provided by the APP is the coco 2017 val dataset.

If users want to train by themselves, they can download other coco datasets. The format of the label file is object keypoints json format. The training json annotation file should be placed in "your dataset name/train/annotations" and renamed to "person_keypoints_train.json".

The validated dataset tag file is placed in "your dataset name/val/annotations" and renamed to "val.json".



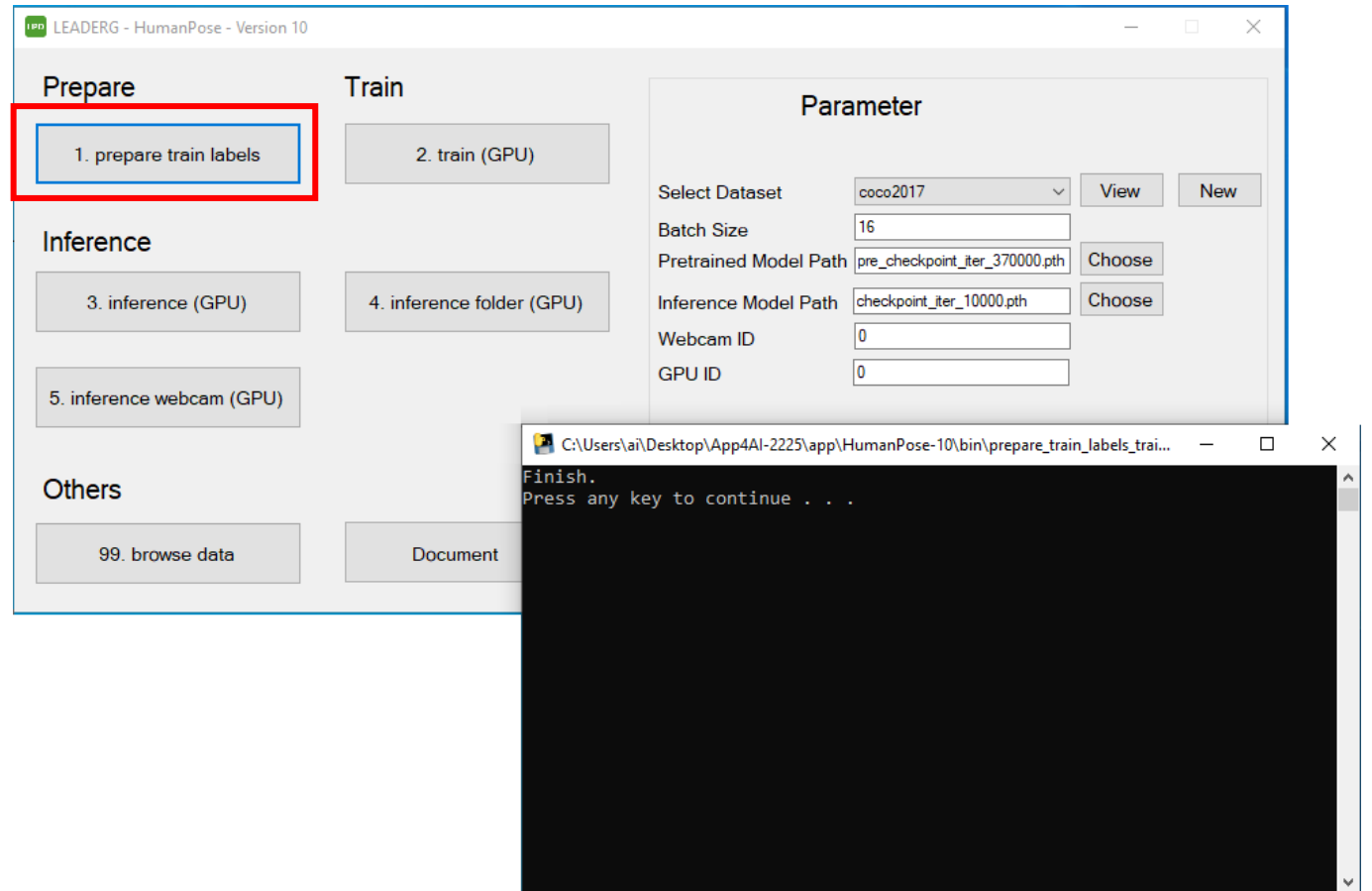
Name	Date modified	Type	Size
person_keypoints_train.json	4/21/2020 4:56 PM	JSON File	9,786 KB



Name	Date modified	Type	Size
val.json	4/21/2020 4:55 PM	JSON File	6 KB

1. prepare train labels

Generate the pkl files needed for training.



2. train (GPU)

Start training.

Before training, you can select the model to be used as the pretrained model in Parameter -> Pretrained Model Path

The screenshot shows the LEADERG - HumanPose - Version 11 software interface. The 'Train' tab is selected and highlighted with a red box. The 'Parameter' section on the right shows the following settings:

- Select Dataset: coco2017
- Batch Size: 16
- Pretrained Model Path: pre_checkpoint_iter_370000.pth
- Inference Model Path: checkpoint_iter_10000.pth
- Webcam ID: 0
- GPU ID: 0

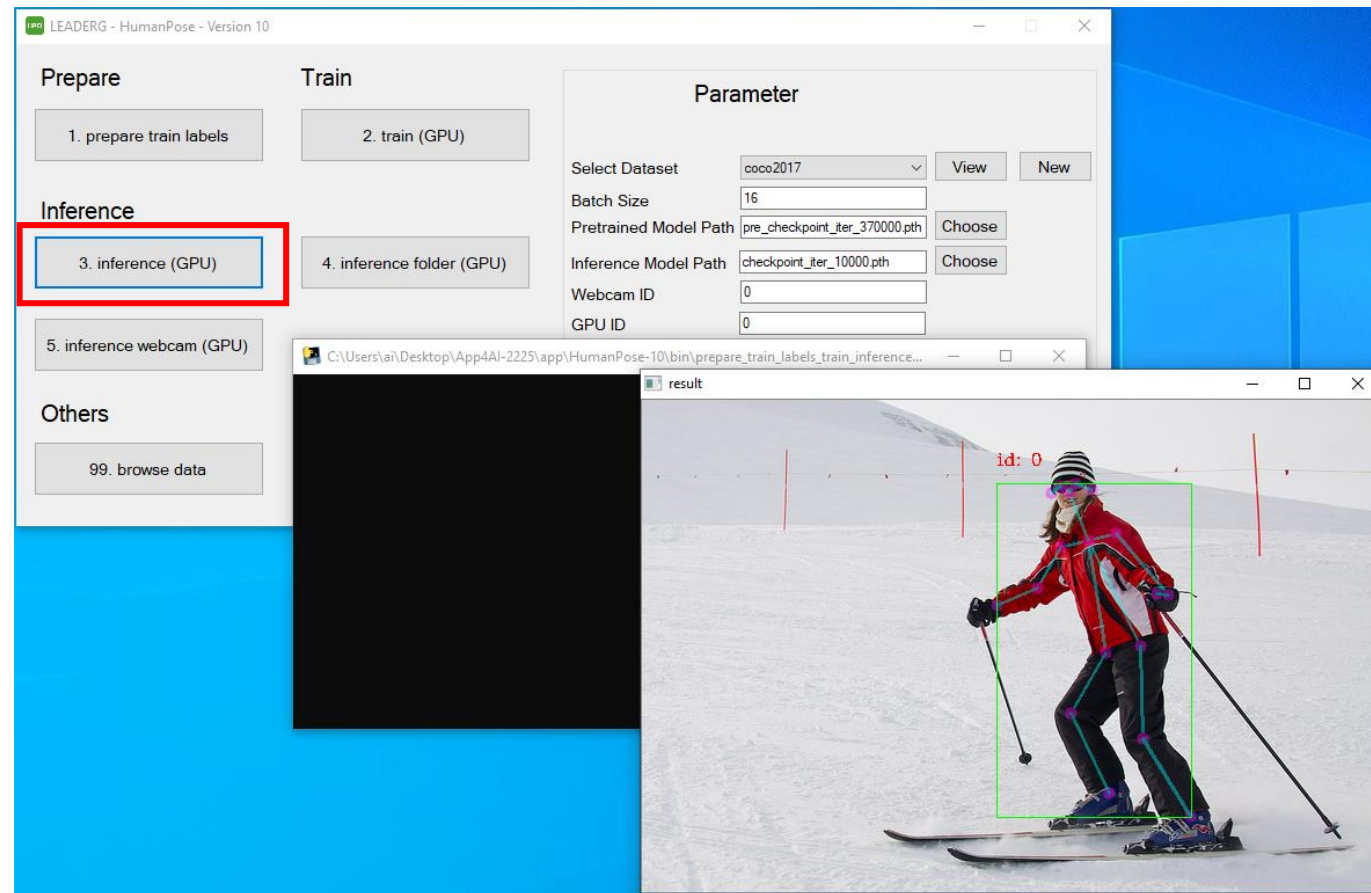
The terminal window in the foreground displays the following output:

```
p.iouType keypoints
DONE (t=0.00s).
Accumulating evaluation results...
DONE (t=0.00s).
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets= 20 ] = 0.900
Average Precision (AP) @[ IoU=0.50 | area= all | maxDets= 20 ] = 1.000
Average Precision (AP) @[ IoU=0.75 | area= all | maxDets= 20 ] = 1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area=medium | maxDets= 20 ] = -1.000
Average Precision (AP) @[ IoU=0.50:0.95 | area= large | maxDets= 20 ] = 0.900
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 20 ] = 0.900
Average Recall (AR) @[ IoU=0.50 | area= all | maxDets= 20 ] = 1.000
Average Recall (AR) @[ IoU=0.75 | area= all | maxDets= 20 ] = 1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area=medium | maxDets= 20 ] = -1.000
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets= 20 ] = 0.900
Iter: 120
stage1_pafs_loss: 112.43582382202149
stage1_heatmaps_loss: 41.32580642700195
stage2_pafs_loss: 107.85015096664429
stage2_heatmaps_loss: 39.58135824203491
stage3_pafs_loss: 108.74478578567505
stage3_heatmaps_loss: 39.88248434066772
stage4_pafs_loss: 109.944753074646
stage4_heatmaps_loss: 40.41582174301148
```

3. inference (GPU)

Infer a single image.

Before inference, the model to be inferred can be selected in Parameter -> Inference Model Path.



4. inference folder (GPU)

Infer all images in the folder, press any key on the display window to view the next image result. Before inference, the model to be inferred can be selected in Parameter -> Inference Model Path.

The screenshot displays the LEADERG - HumanPose - Version 10 software interface. The main window is divided into several sections:

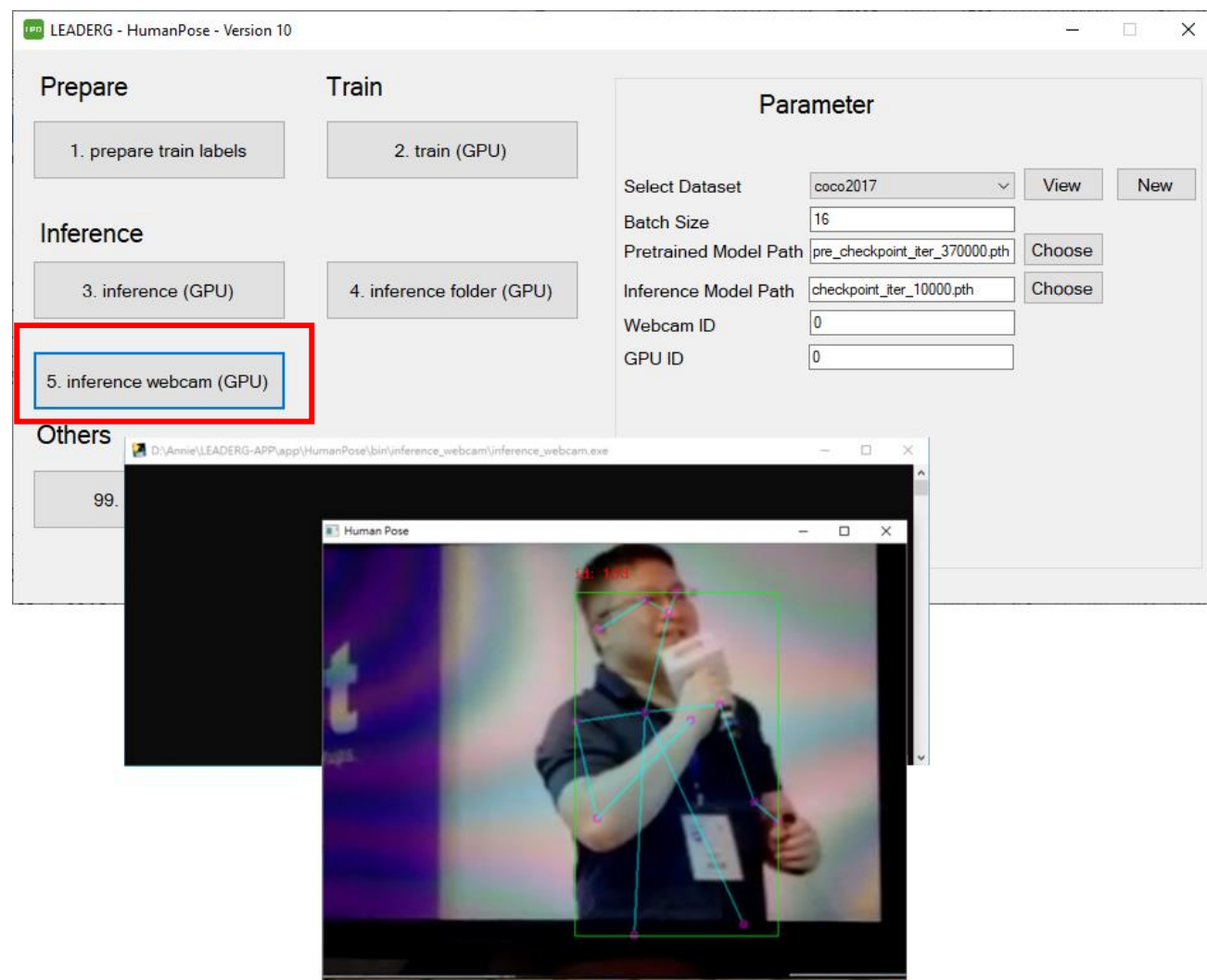
- Prepare:** Contains buttons for "1. prepare train labels" and "2. train (GPU)".
- Inference:** Contains buttons for "3. inference (GPU)" and "4. inference folder (GPU)". The "4. inference folder (GPU)" button is highlighted with a red rectangle.
- Parameter:** A configuration panel with the following settings:
 - Select Dataset: coco2017 (with View and New buttons)
 - Batch Size: 16
 - Pretrained Model Path: pre_checkpoint_iter_370000.pth (with Choose button)
 - Inference Model Path: checkpoint_iter_100000.pth (with Choose button)
 - Webcam ID: 0
 - GPU ID: 0
- Others:** Contains a button for "99. brow".

Below the main window, a smaller window titled "result" displays a video frame of two baseball players on a field. The player in the foreground is wearing a white uniform and a blue helmet, while the player in the background is wearing a green uniform and a blue cap. Both players are overlaid with a green bounding box and a blue skeletal pose estimation model. The skeletal model consists of pink dots representing joints and blue lines representing body parts. The "result" window has a blue border and standard window controls.

5. inference webcam (GPU)

Infer the image of the webcam.

Press the “Esc” key on the display to turn the webcam off.



Reference

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