

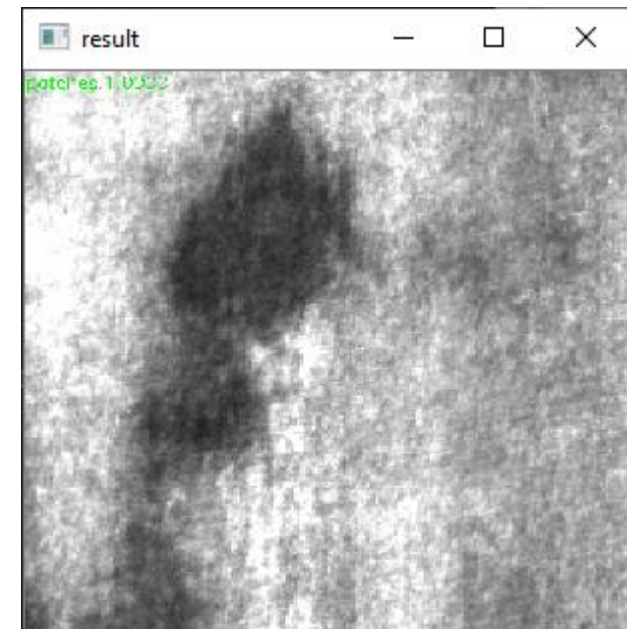
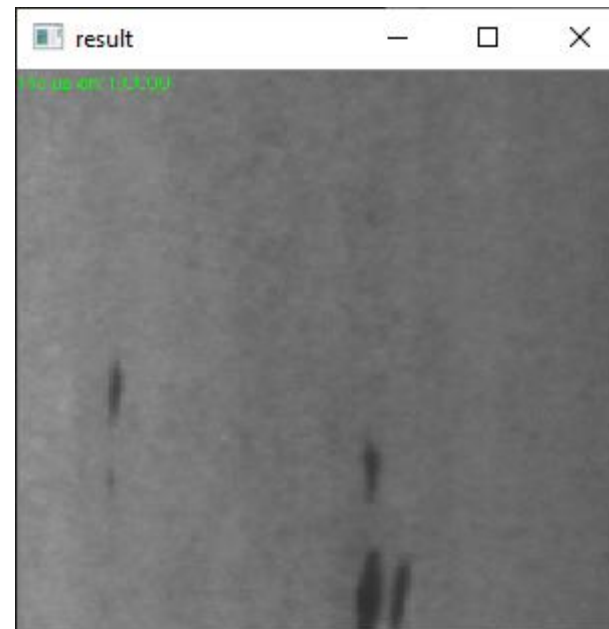
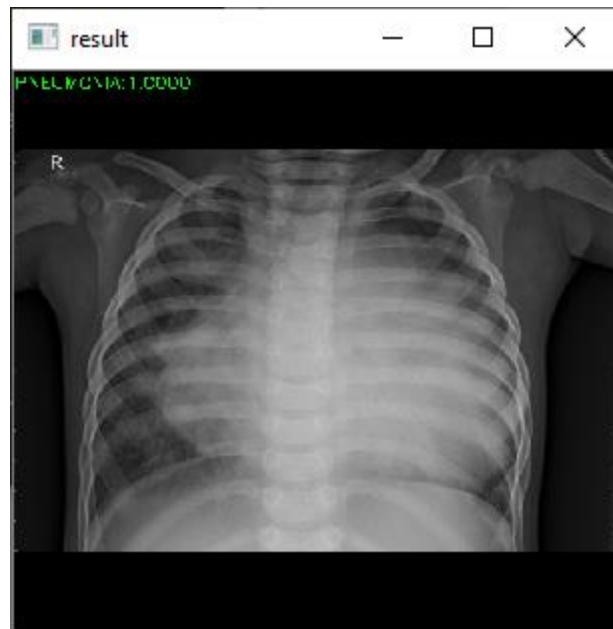
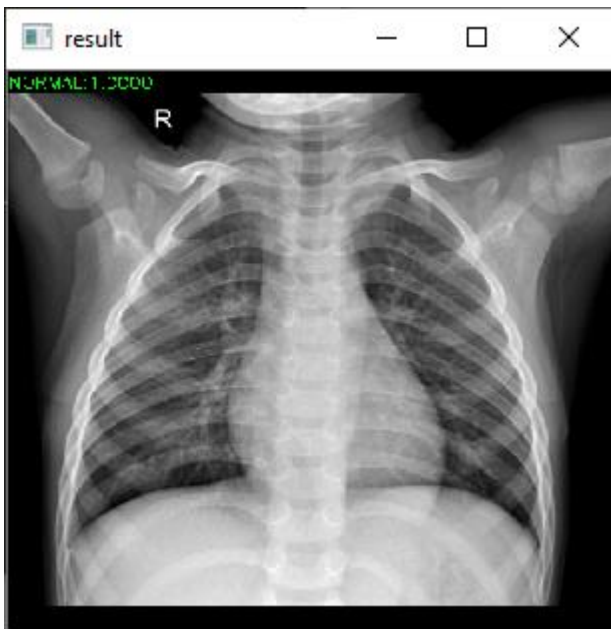
CSPNet2

The CSPNet algorithm optimizes the deep learning network structure. In addition to the world's first accuracy, it can also maintain ultra-high inference speed on edge computing embedded systems.

Version 20230103

Applications

- It can be used in factory defect detection, traffic flow analysis, people flow analysis, safety monitoring, medical image analysis, biological image analysis, industrial safety image analysis, mask image analysis and other fields.



Flow

- Data preparation
- Train
- Inference

The screenshot shows the LEADERG CSPNet2 - 8 software interface. The window title is "LEADERG CSPNet2 - 8". The interface is divided into three main sections: Preprocess, Train, and Inference.

Preprocess: This section contains a dropdown menu for "1. Select Dataset:" with "chest" selected. To the right are three buttons: "View", "New", and "Document".

Train: This section contains several input fields and buttons:

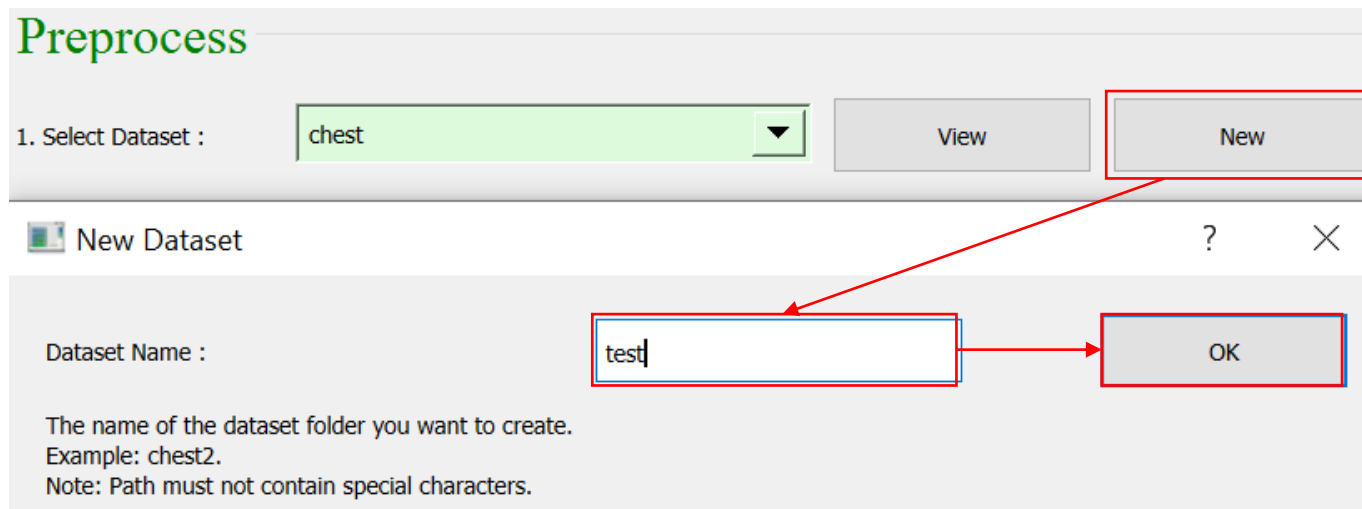
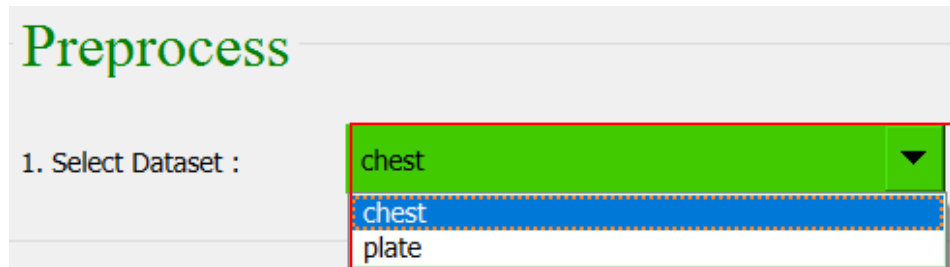
- n_epochs : 500
- batch size : 12
- learning_rate : 0.005
- earlyStopping : 500
- GPU ID : 0 (0, 1, 2, ... for Nvidia GPU)
- is_resume [Select]
- Buttons: "2. train (GPU)" and "2. train (CPU)"

Inference: This section contains several input fields and buttons:

- batch size : 12
- model : [Select]
- GPU ID : 0 (0, 1, 2, ... for Nvidia GPU or -1 for CPU)
- Buttons: "3.validation (GPU)", "4.inference (GPU)", "5.inference folder (GPU)" and "3.validation (CPU)", "4.inference (CPU)", "5.inference folder (CPU)"

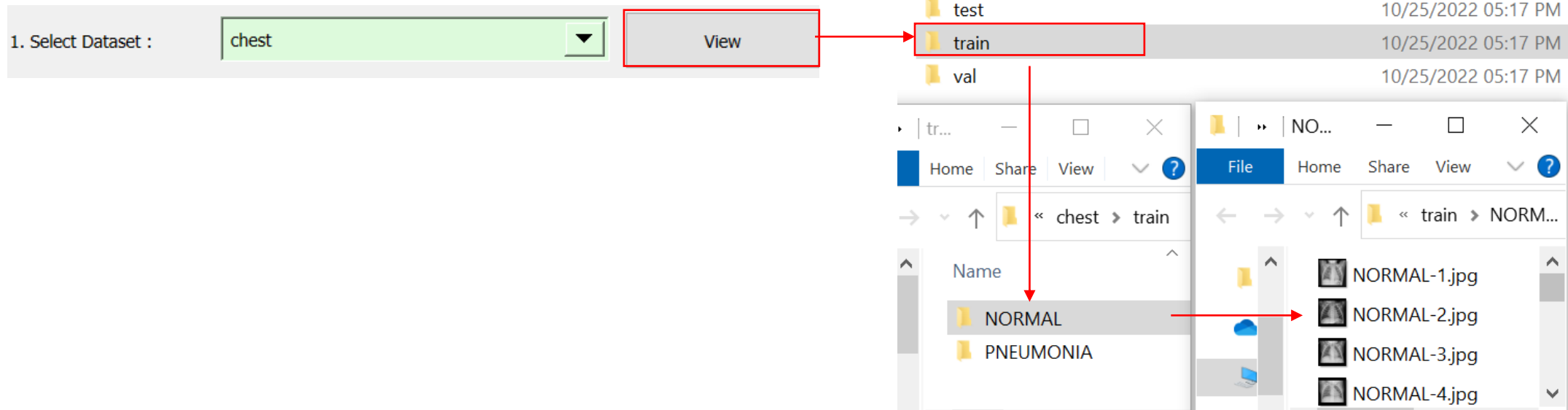
Data Preparation - Step 1

- Choose a dataset for AI learning, or create a new dataset.



Data Preparation - Step 2

- Click view to open the dataset folder.
- Put the training, inference, and test images in the train, val, and test folders.
- One category one folder.

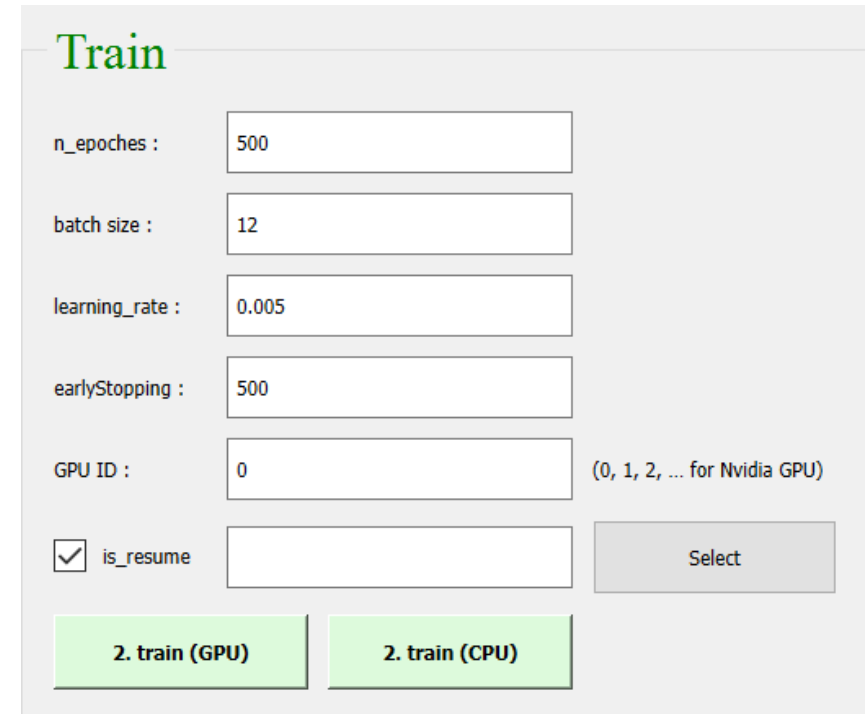


Data Preparation - Step 3

- Note:
 - The file name of the image needs to comply with the requirements: The file name of the image must be prefixed with [category name-], for example: inclusion in inclusion-1.jpg is the category name of the image.
 - The image is recommended as a square. If it is not a square, you can use zoom or crop, etc.
 - The image file and its attached file name must be .jpg or .png or .jpeg.
 - The image must be in 24 bit RGB image format.

Train

- Click 2. train to start training
- Setting parameters.
 - n_epochs: the number of training epochs.
 - batch_size
 - lr: learning rate.
 - earlyStopping: stop training when the number of epochs does not improve
 - isResume
 - Select resume model: the model to resume training.



The screenshot shows a 'Train' configuration panel with the following elements:

- Train** (Section Header)
- n_epochs :** Input field containing '500'
- batch size :** Input field containing '12'
- learning_rate :** Input field containing '0.005'
- earlyStopping :** Input field containing '500'
- GPU ID :** Input field containing '0', with a note '(0, 1, 2, ... for Nvidia GPU)' to its right.
- is_resume** (checkbox)
- Select** (button)
- 2. train (GPU)** (button)
- 2. train (CPU)** (button)

Inference – Step 1

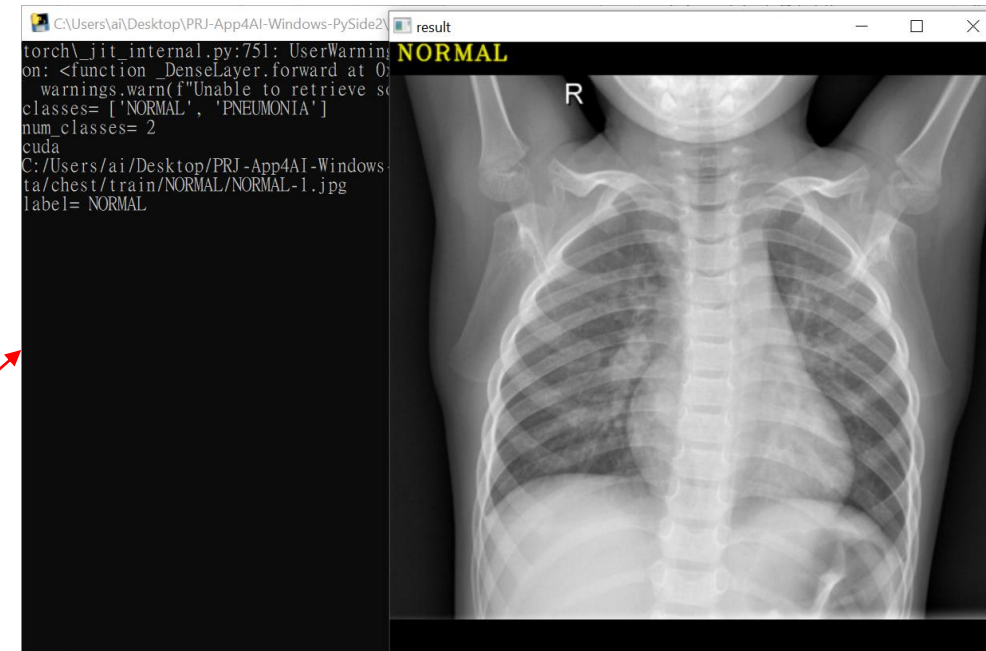
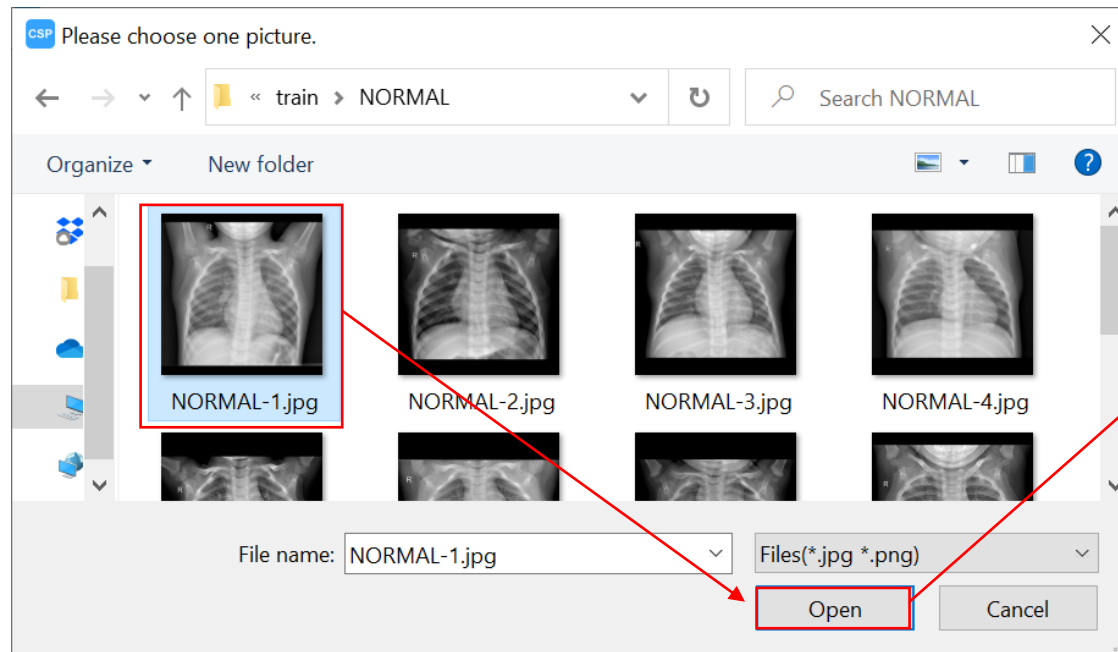
- Mode:
 - 3.validation: verify the accuracy of a folder and the accuracy of each category.
 - 4.inference: Infer a single image.
 - 5. inference folder: infer the images in a test folder, and then output the result csv and the result image
- Setting parameters.
 - batch size: for 3.validation and 5.inference folder.
 - model: model for inference.

The screenshot shows a web interface titled "Inference" with the following elements:

- batch size :** A text input field containing the value "12".
- model :** A text input field followed by a "Select" button.
- GPU ID :** A text input field containing the value "0", with a note "(0, 1, 2, ... for Nvidia GPU or -1 for CPU)" to its right.
- Action Buttons:** A grid of six green buttons arranged in two rows and three columns:
 - Top row: "3.validation (GPU)", "4.inference (GPU)", "5.inference folder (GPU)"
 - Bottom row: "3.validation (CPU)", "4.inference (CPU)", "5.inference folder (CPU)"

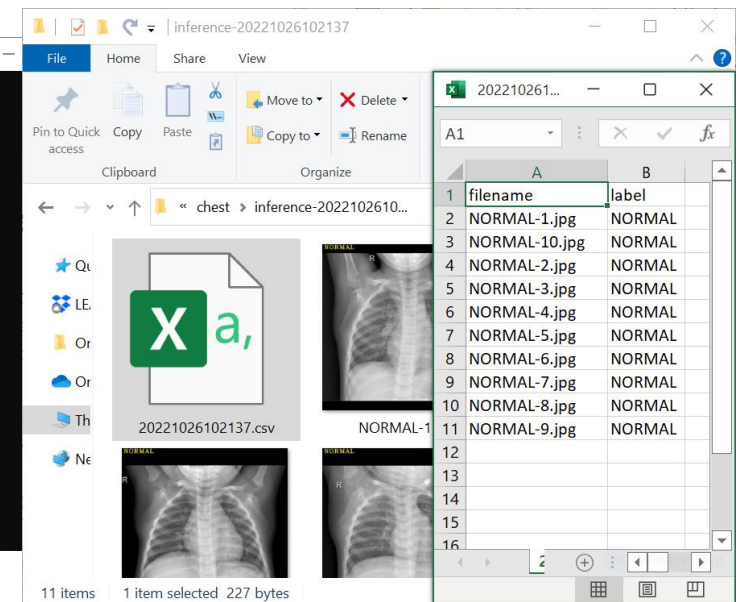
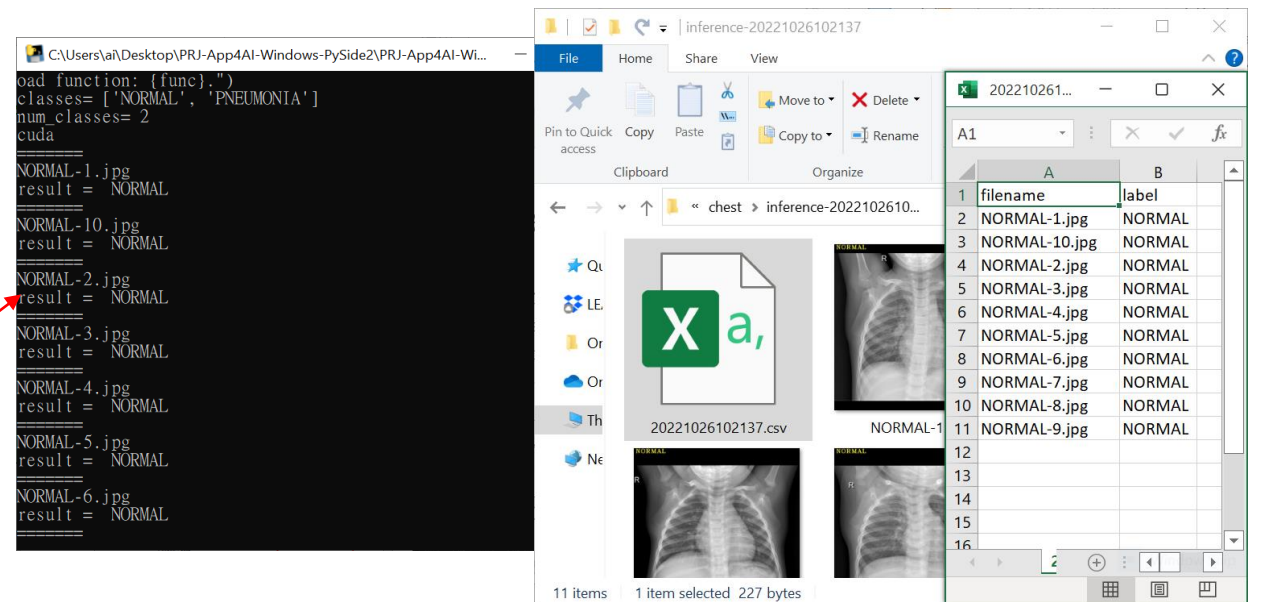
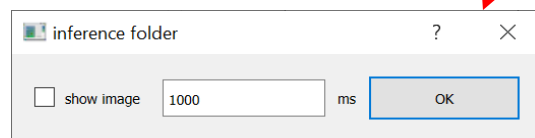
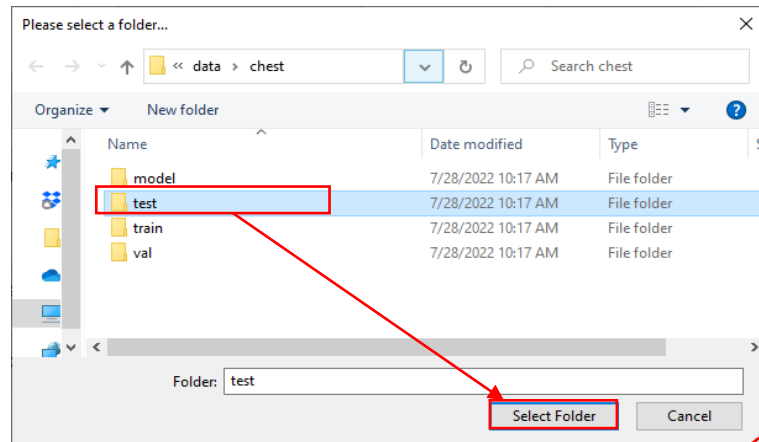
Inference – Step 2

- 4. inference.
 - Choose an image to infer.



Inference – Step 2

- 5. inference_folder.
 - Select the inference folder to get the result.
 - If you set the display image, press any key on the keyboard to switch to the next image.
 - Infer the images in a test folder, and then output the result csv and the result image



Reference

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