

User Guide of Dual View annotation Tool (1.3)

Window/Mac/MATLAB

(Recommend MATLAB 2020b).

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Tasks

1. Find the coordination frames for both views.
***Even the frame number on two views are the same, one camera has delay of a few second than another camera.
2. Correct Animal IDs on Ceiling Cam to match with Animal IDs on Pen_Cam.
3. Correct animal boundary box.



553 / 7200

Pen_Cam



Pan C

Pan B

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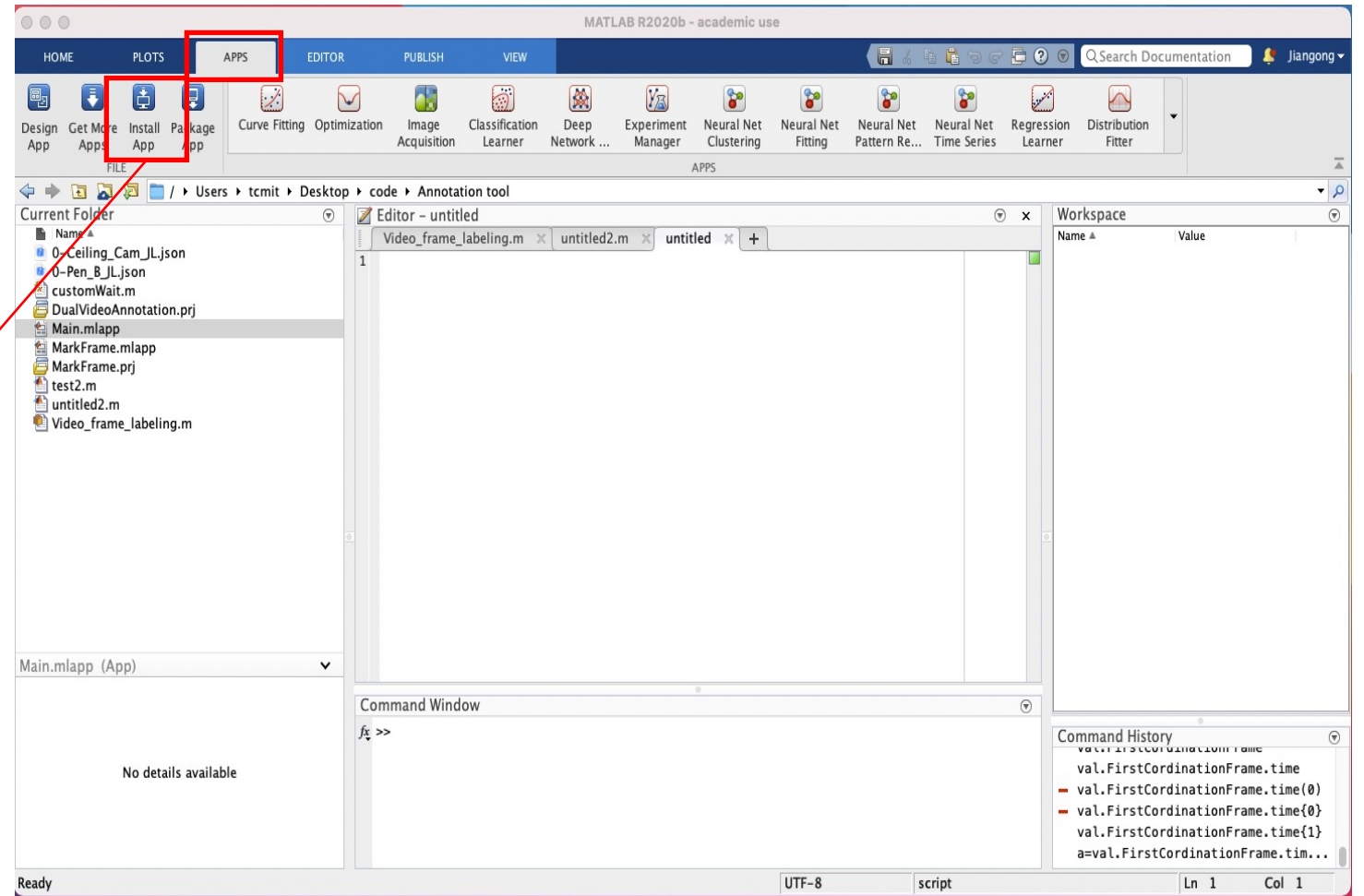
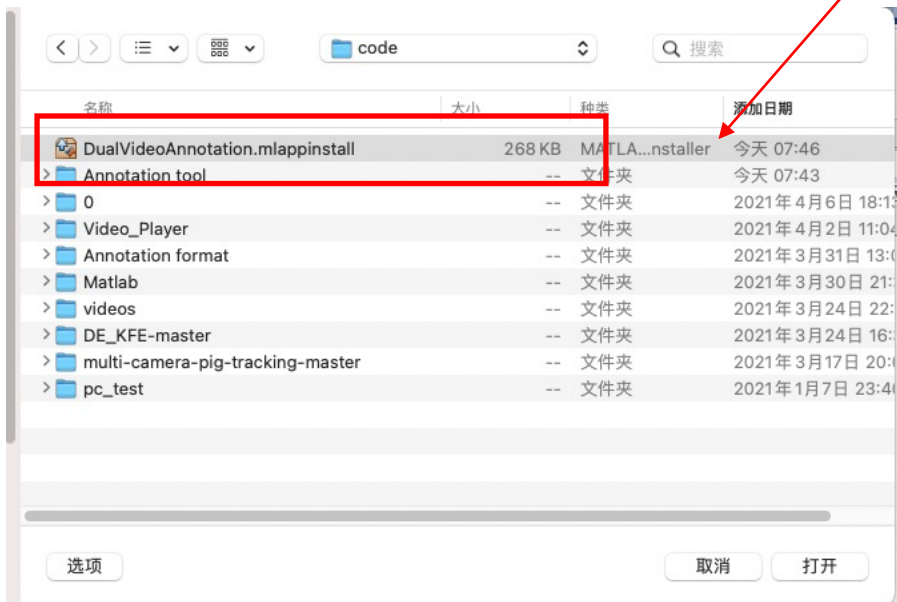
Ceiling_Cam

Prepared Tool and files

1. Install annotation tool

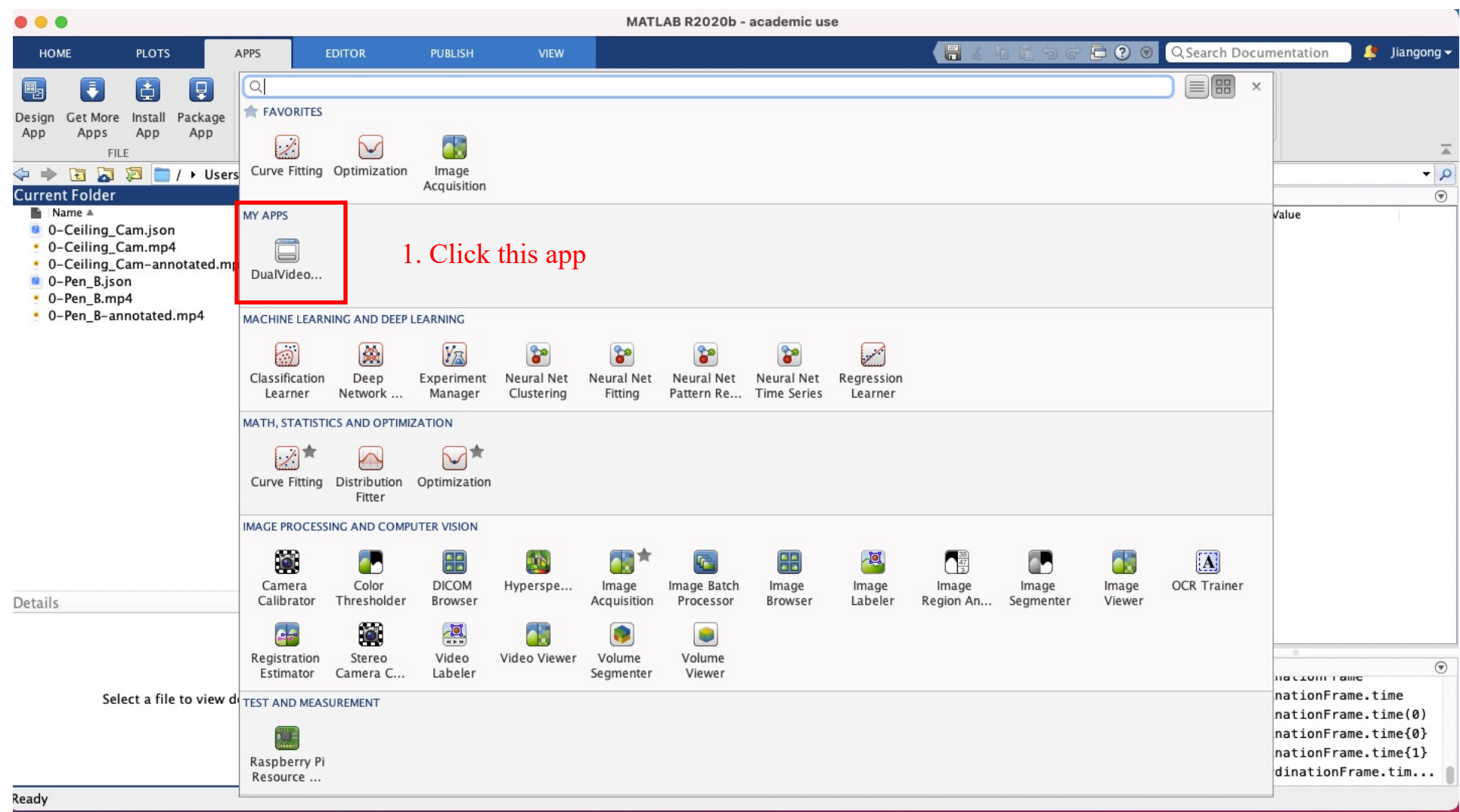
1. Click APPS tab

2. Click install App




















Prepared Tool and files

2. Start annotation tool



Prepared Tool and files

3. *Download video folder/Unzip*

Search in Drive							
Shared with me > Videos to annotate							
Name ↑		Owner	Last modified	File size			
 0		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 1		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 2		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 3		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 4		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 5		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 6		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 7		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 8		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 9		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 10		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 11		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 12		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 13		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 14		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 15		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			
 16		Aziz Saifuddin	Mar 14, 2021 Aziz Saifuddin	—			

Prepared Tool and files

4. Import video file and uncorrected annotation file

The screenshot displays the 'Two-View Annotation Tool for Animal Videos' interface. At the top, a file explorer window shows a list of files in a folder named '0'. The files are:

Name	Size	Kind	Date Added
0-Ceiling_Cam_JL.json	919 bytes	JSON Document	今天 09:41
0-Pen_B_JL.json	2 KB	JSON Document	今天 09:41
0-Ceiling_Cam-annotated.mp4	426.5 MB	MPEG-4 movie	2021年4月6日 18:12
0-Pen_B-annotated.mp4	538.9 MB	MPEG-4 movie	2021年4月6日 18:12
0-Ceiling_Cam.mp4	492.3 MB	MPEG-4 movie	2021年4月6日 18:12
0-Pen_B.mp4	493.1 MB	MPEG-4 movie	2021年4月6日 18:12
0-Pen_B.json	17.2 MB	JSON Document	2021年4月6日 18:12
0-Ceiling_Cam.json	7.9 MB	JSON Document	2021年4月6日 18:12

Below the file explorer, the main tool interface is shown. It features two large video playback windows labeled 'Left' and 'Right'. The 'Left' window has a coordinate system with axes from 0 to 1. The 'Right' window also has a coordinate system with axes from 0 to 1. Below the video windows, there are several control panels:

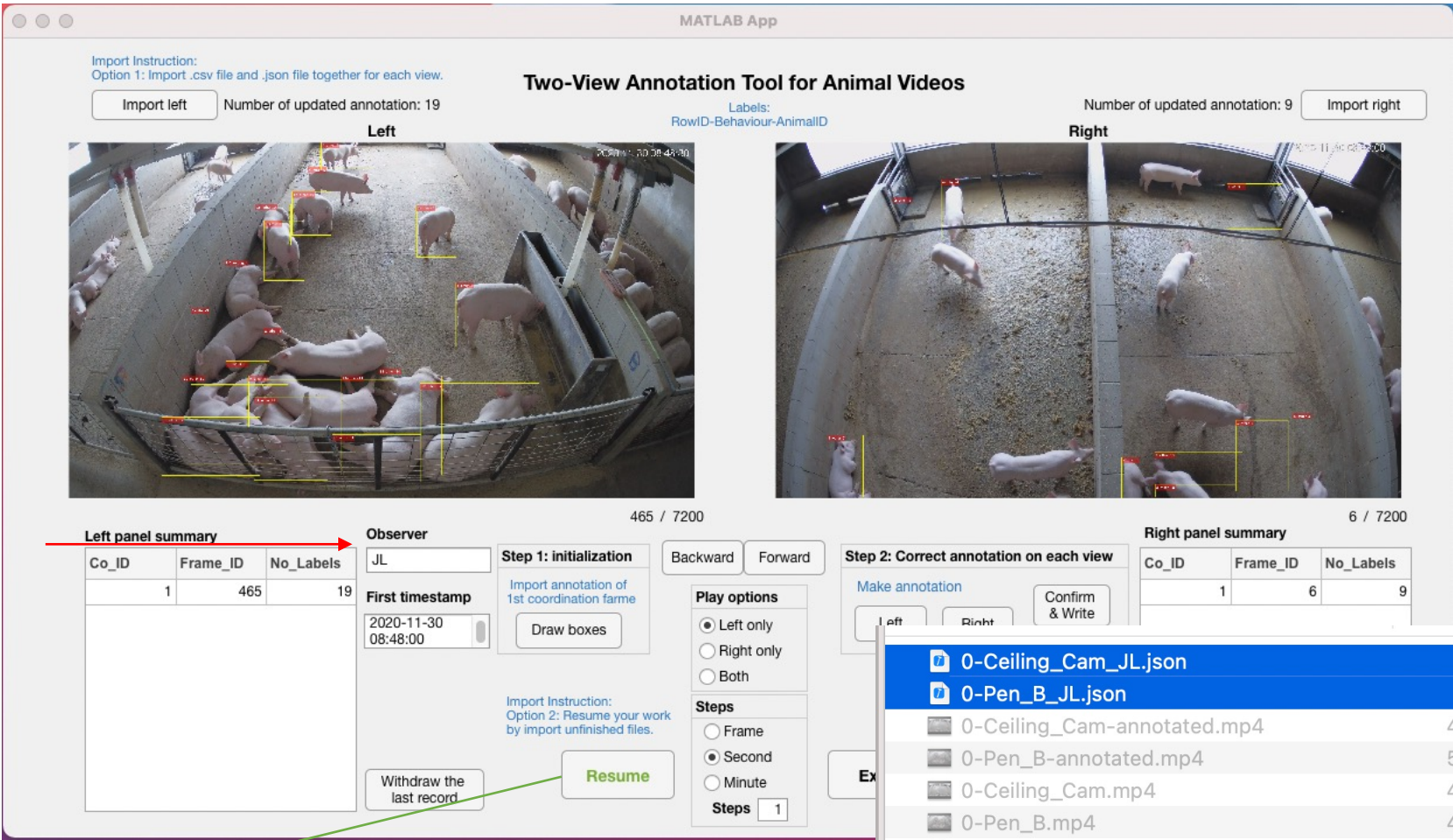
- Import Instruction:** Option 1: Import .mp4 file and .json file together for each view. (This instruction is highlighted with a red box and an arrow pointing to the file explorer.)
- Import left** and **Import status** buttons (highlighted with a red box and an arrow pointing to the file explorer).
- Import status** and **Import right** buttons (highlighted with a red box and an arrow pointing to the file explorer).
- Left panel summary** table with columns: Co_ID, Frame_ID, No_Labels.
- Observer** section with fields for Name, First timestamp, and Time.
- Step 1: initialization** section with a 'Draw boxes' button and an 'Import annotation of 1st coordination frame' button.
- Play options** section with radio buttons for 'Left only', 'Right only', and 'Both'.
- Steps** section with radio buttons for 'Frame', 'Second', and 'Minute'.
- Step 2: Correct annotation on each view** section with 'Left' and 'Right' buttons, a 'Confirm & Write' button, and a 'Video Info' label.
- Export** button.
- Withdraw the last record** button.
- Resume** button.

At the bottom right, there is a **Right panel summary** table with columns: Co_ID, Frame_ID, No_Labels.

• Select .mp4 and .json together.
*****2 files per view; 4 files in total.**

Prepared Tool and files

4. Resume your work (Continue your saved work)



Write your name again

Choose two files with your name ended.

You can continue work on your unfinished frames.

0-Ceiling_Cam_JL.json	4 KB	JSON Document
0-Pen_B_JL.json	5 KB	JSON Document
0-Ceiling_Cam-annotated.mp4	426.5 MB	MPEG-4 影片
0-Pen_B-annotated.mp4	538.9 MB	MPEG-4 影片
0-Ceiling_Cam.mp4	492.3 MB	MPEG-4 影片
0-Pen_B.mp4	493.1 MB	MPEG-4 影片
0-Pen_B.json	17.2 MB	JSON Document
0-Ceiling_Cam.json	7.9 MB	JSON Document

Instruction to main user interface

Import status; Frame status; number of annotations per frame

User Input

Frame status

Annotation functions

Play control options

Summary of your annotation

Import Instruction:
Option 1: Import .csv file and .json file together for each view.

Import left

Number of updated annotation: 16

Two-View Annotation Tool for Animal Videos

Number of updated annotation: 5

Import right



Left



Right

Left panel summary

Co_ID	Frame_ID	No_Labels
3	493	1
4	508	1
5	523	1
6	538	1
7	553	1
8	568	1
9	583	1
10	598	1

Observer
JL

First timestamp
2020-11-30 08:48:00

Export successfully.

Withdraw last record

Step 1: initialization

Import annotation of st coordination farma

Draw boxes

Resume

Backward

Forward

Play options

Left only

Right only

Both

Steps

Frame

Second

Minute

Steps 1

Step 2: Correct annotation on each view

Make annotation

Left

Right

Confirm & Write

Revise record

Co_ID 10

Retrieve

Export

Withdraw the last record

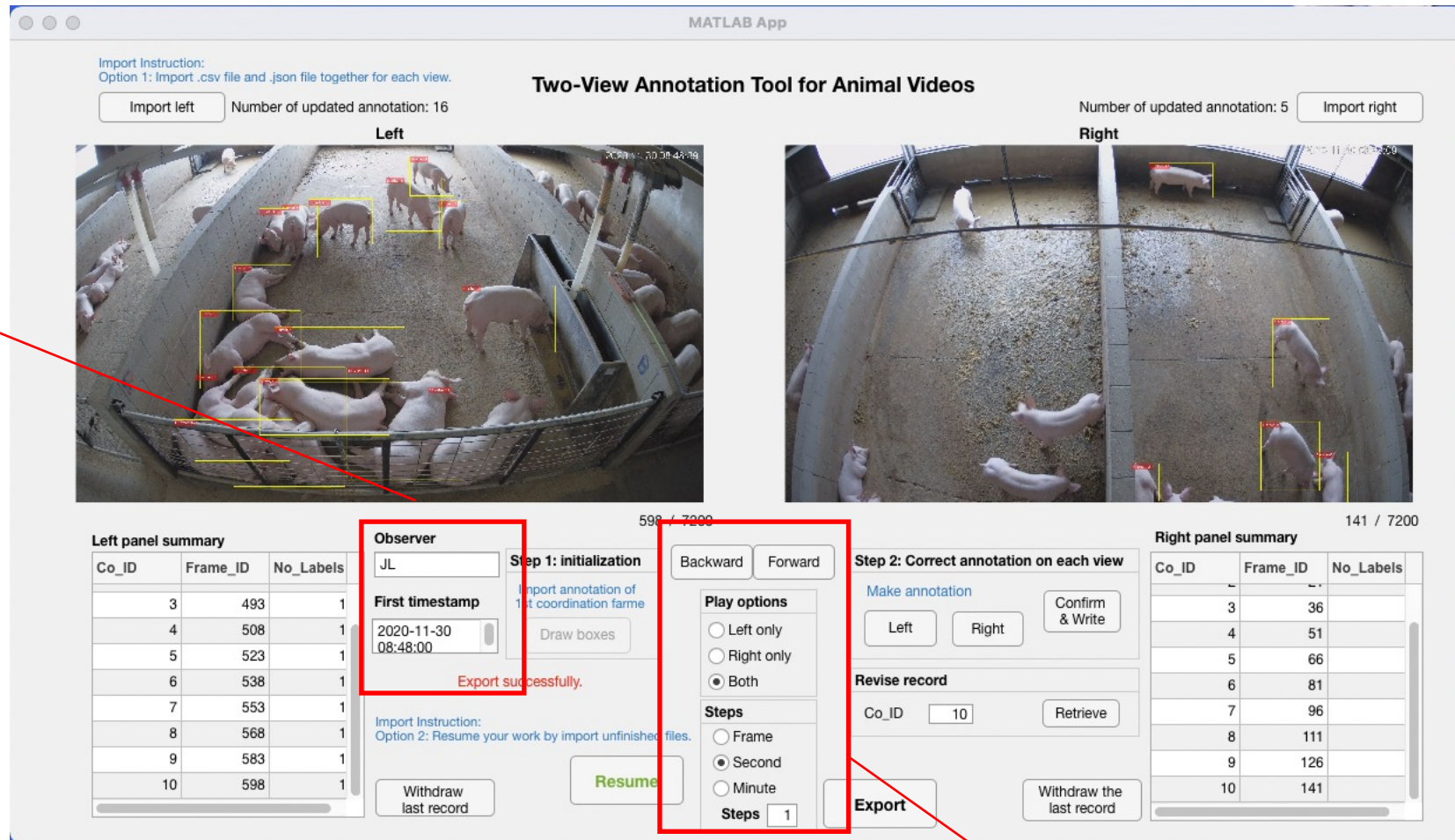
Right panel summary

Co_ID	Frame_ID	No_Labels
3	36	
4	51	
5	66	
6	81	
7	96	
8	111	
9	126	
10	141	

Start annotation

1. Write the annotation information & skip first 5 frames

- Write your name.
- Read the timestamp on the frame and write to the box.



- Choose "Both";
- "Frame"; Steps=5
- Click "Forward"

Start annotation

2. Choose the first coordination frame

***Even the frame number on two views are the same, one camera has delay of a few seconds than another camera.



Ex: The position and posture of 5 pigs can be matched on two views; The position of other pigs can be verified from two views.

Hint:

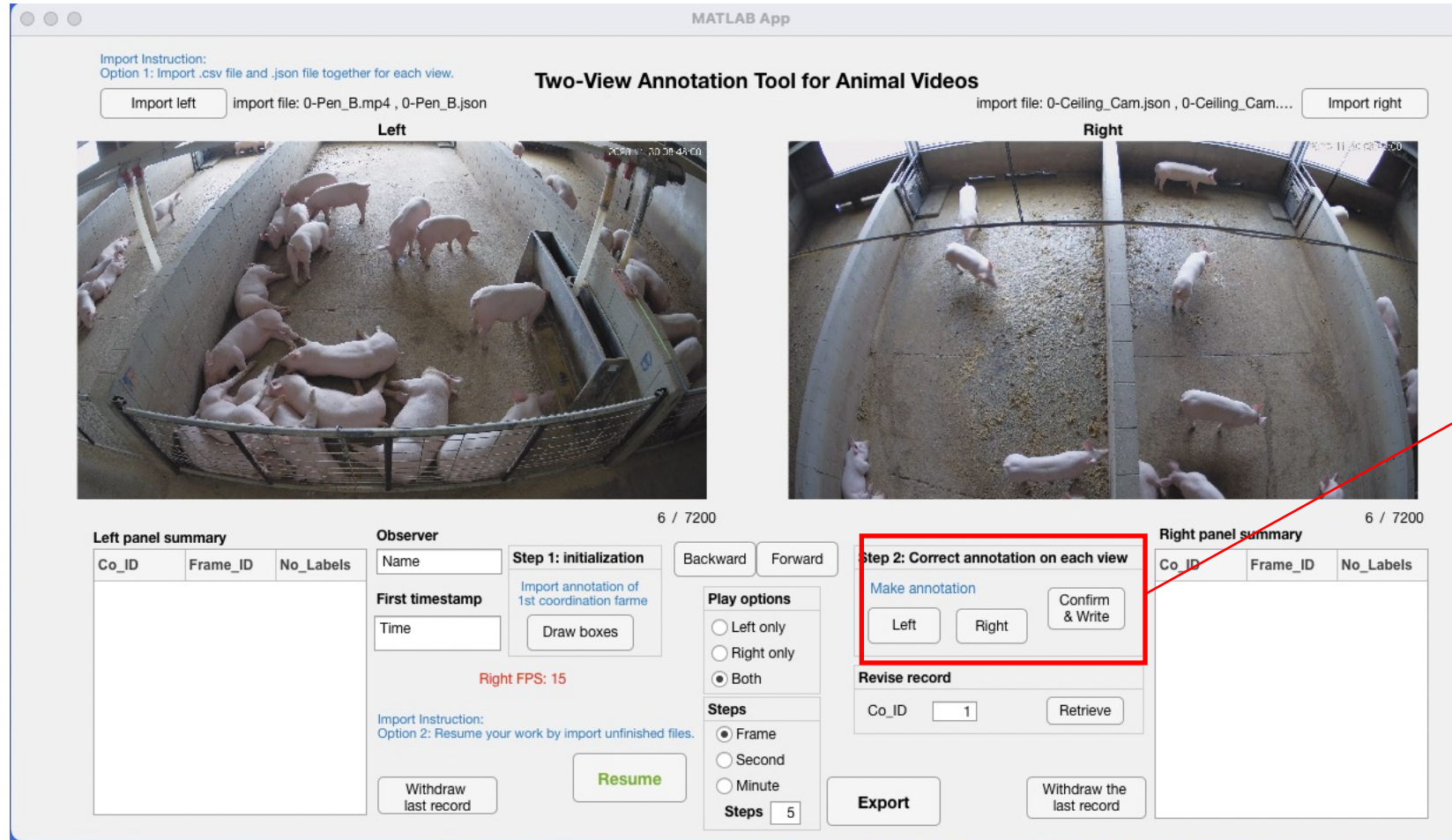
- Mostly, Pen_Cam has delay of a few seconds.
- Play Ceil_Cam “Forward” by few seconds to find the frame with same content.

Click “Draw box” button
**This button should only be pressed once for 1st coordination frame.

Each second = 15 frames

Start annotation

3. Annotated the first coordination frames



Hint:

- Annotate the Pen_Cam first.
- Click either “left” and “Right” button
- A popup window will be opened.

Start annotation

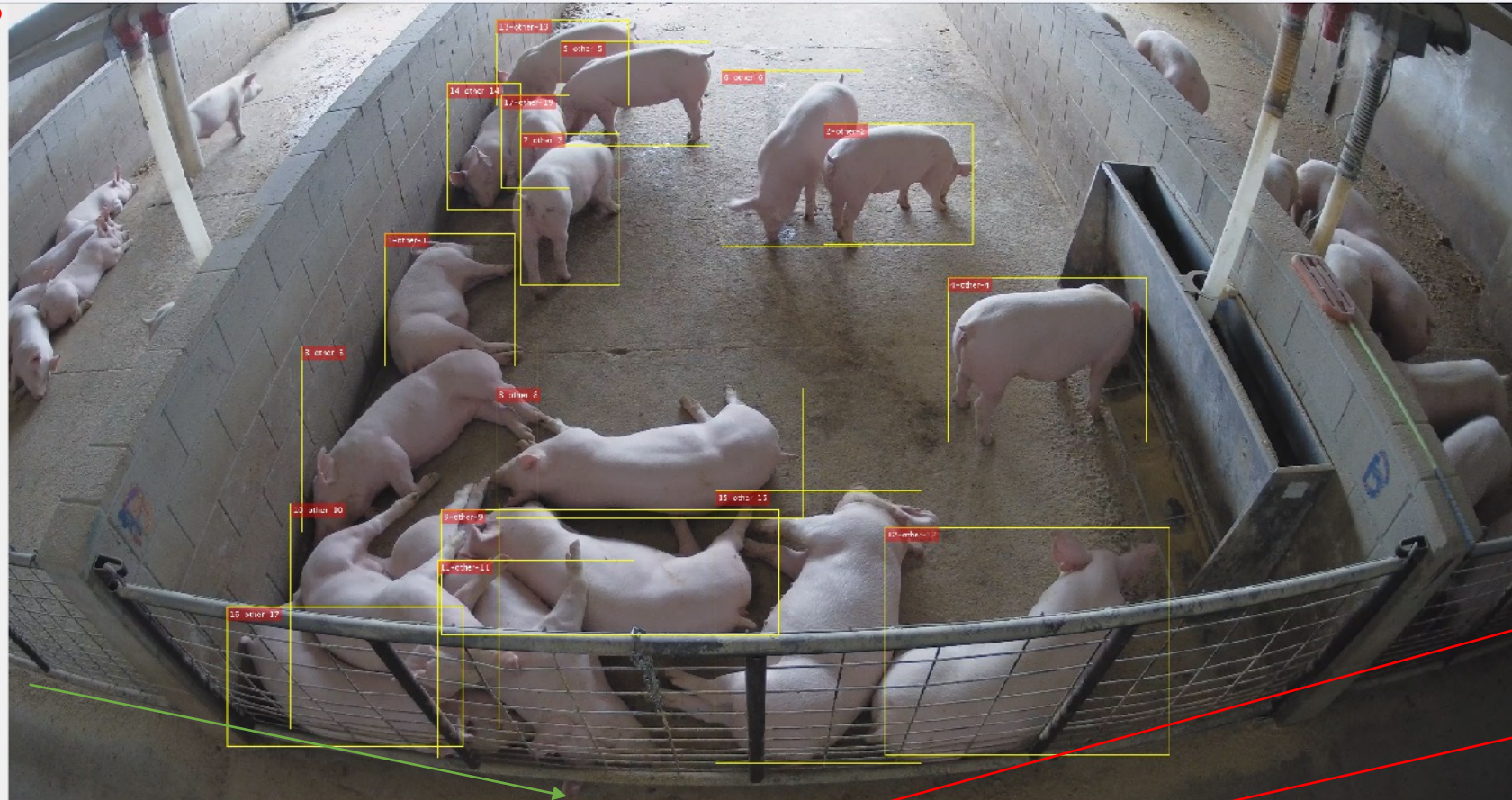
4. Annotated the Pen_Cam first

1. Adjust window to show all images.

Labels:

ListID_behavior_AnimalID

- Refer ListID to remove/correct/Add.
- Match AnimalID on left/right view.



3. Correct animal behavior and adjust box

4. "Auto sort" will correct all animal ID from low to high.

5. "Close save & close" to finish the annotation of this frame.

Annotation

No of Labels: 17

Labels:
ListID_Behaviour_AnimalID

ListID: 1, 2, 3, 4

Remove ID Re-draw ID

Confirm delete

Show annotation

Animal Behavior: No change

Correct Behavior

Correct Bbox

Add New Box

Correct Animal ID

Auto-sort Animal ID

Change listID: 0

To AnimalID: 0

Store change

Save & Close

** If unknown, type a number not showed on both views.

2. Choose list_ID to process

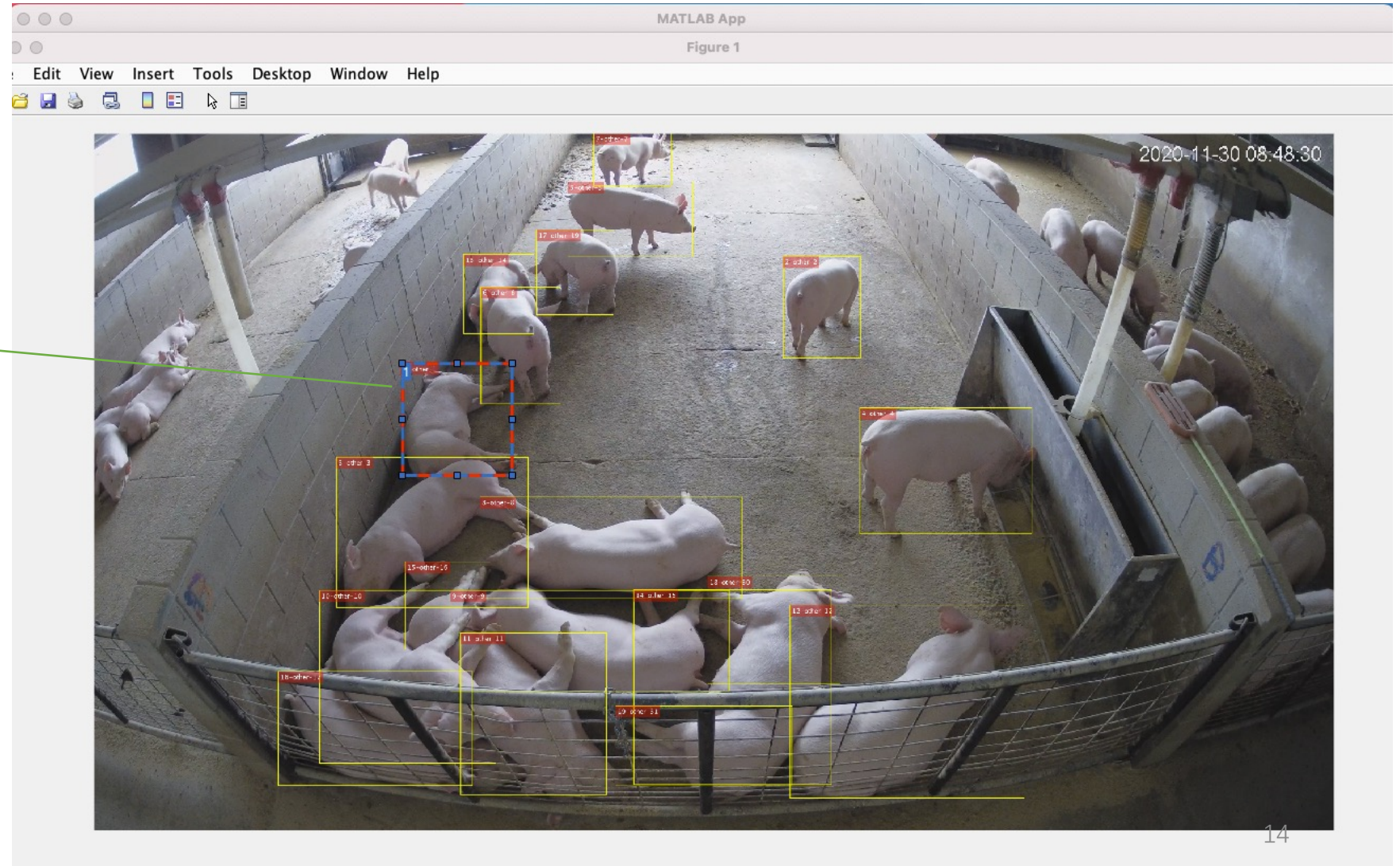
Hint:
"Show Annotation" will display all corrected annotations.

Hint:
If you want to remove one annotation, click "Confirm delete" to confirm your operation.

Start annotation

4. Annotated the Pen_Cam first-Correct Bbox/Add new Box

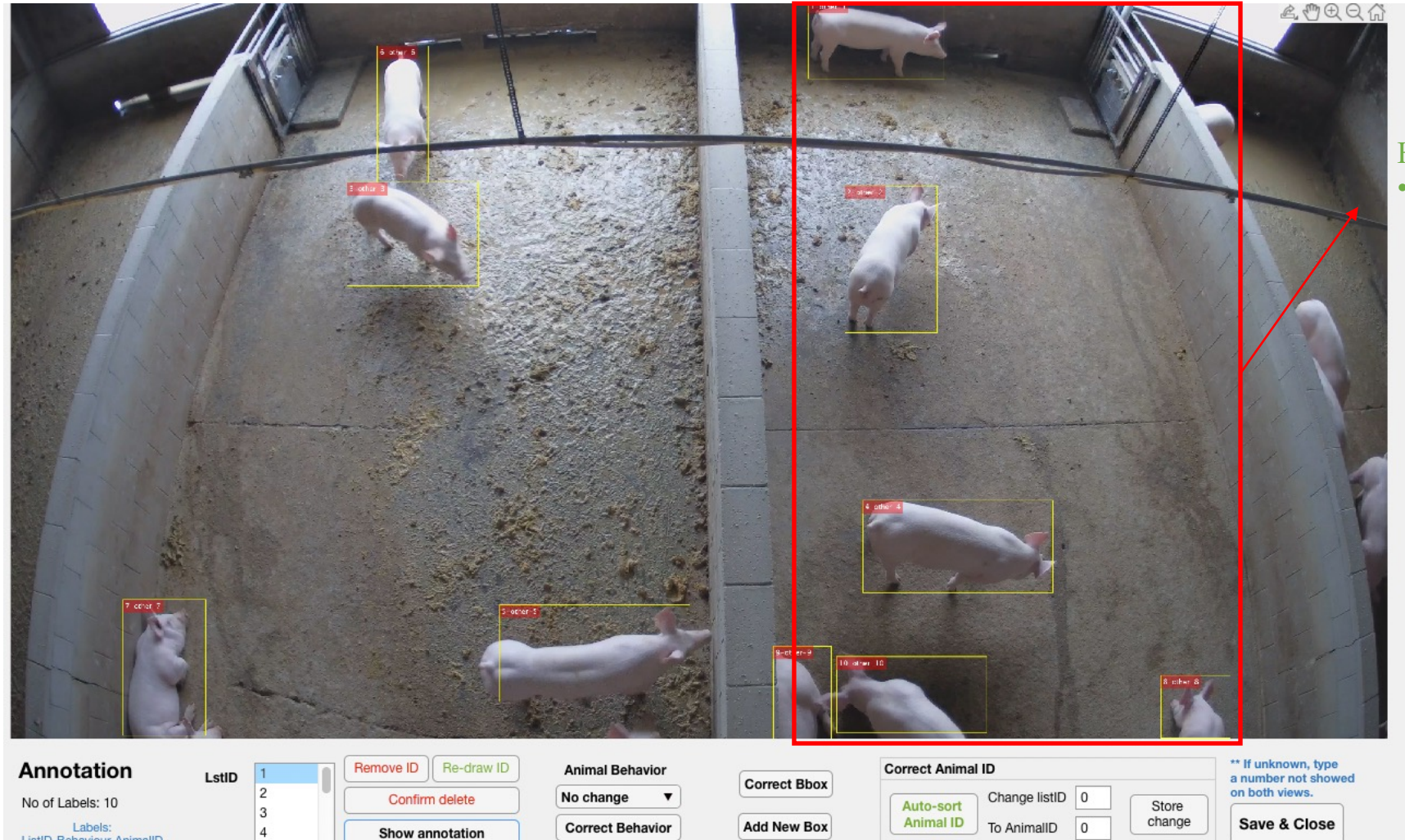
- A blue-red box will show-up, adjust the boundary by mouse.
- Double-click the boundary to save and exit this window.



Start annotation

5. Annotated the Ceil_Cam

1. Adjust window to show all images.



Hint:

- Only the animal in this pen should be annotated.

6. “Close save & close” to finish the annotation of this frame.

2. Choose ID to process

3. Correct annotation for the pigs shown on the Pen_Cam

4. Remove all other ID

5. Correct animal ID to match with the animal ID on Pen_Cam

Start annotation

6. Confirm annotation of this frame and store results to backend

MATLAB App

Import Instruction:
Option 1: Import .csv file and .json file together for each view.

Import left Number of Annotation: 17

Two-View Annotation Tool for Animal Videos

Number of Annotation: 10 Import right

Left

Right

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Left panel summary

Co_ID	Frame_ID	No_Labels
1	6	17

Observer

Name

First timestamp

Time

Right FPS: 15

Import Instruction:
Option 2: Resume your work by import unfinished files.

Withdraw last record

Resume

Step 1: initialization

Import annotation of 1st coordination frame

Draw boxes

Backward Forward

Play options

☐ Left only
☐ Right only
☒ Both

Steps

☒ Frame
☐ Second
☐ Minute

Steps 5

Export

Step 2: Correct annotation of each view

Make annotation

Left Right

Confirm & Write

Revise record

Co_ID 1 Retrieve

Withdraw the last record

Right panel summary

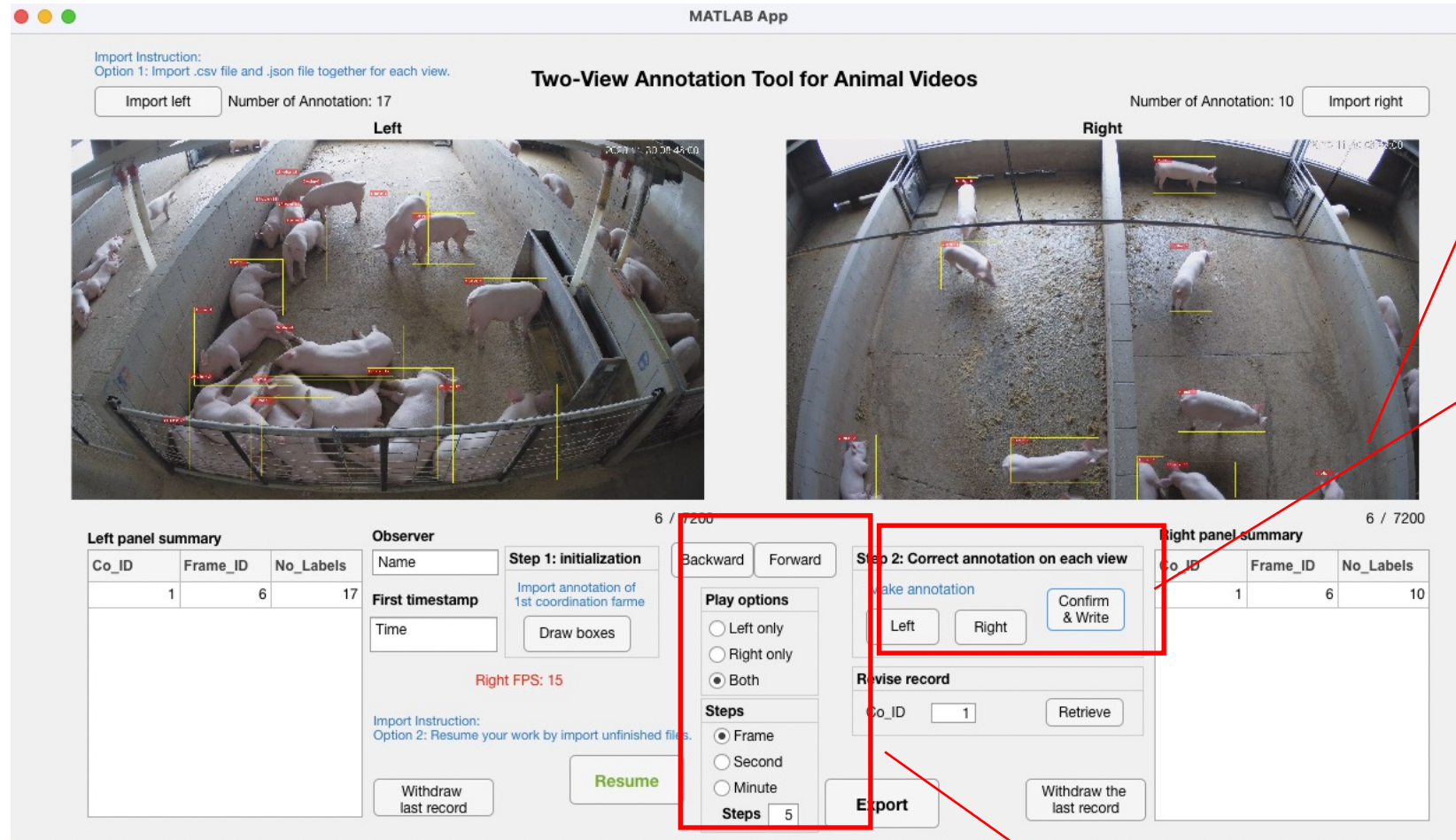
Co_ID	Frame_ID	No_Labels
1	6	10

1. Click "Confirm & write"

Summary of annotated results
will be showed on this two table.

Start annotation

6. Confirm annotation of this frame and store results to backend



Repeat annotation to the next frame.

Hint:

- Once you finish the first coordination frames. You don't need to change animal ID; Unless you see a new pig come to the view.

- Choose "Both";
- "Second"; Steps=1;
- Click "Forward"

Start annotation

7. *Revise record and Export results*

MATLAB App

Import Instruction:
Option 1: Import .csv file and .json file together for each view.

Import left Number of updated annotation: 16

Two-View Annotation Tool for Animal Videos

Number of updated annotation: 5 Import right

Left

Right

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Left panel summary

Co_ID	Frame_ID	No_Labels
3	493	1
4	508	1
5	523	1
6	538	1
7	553	1
8	568	1
9	583	1
10	598	1

Observer
JL

Step 1: initialization

Import annotation of 1st coordination frame

Draw boxes

First timestamp
2020-11-30 08:48:00

Export successfully.

Import Instruction:
Option 2: Resume your work by import unfinished files.

Withdraw last record

Resume

Backward Forward

Play options

☐ Left only
☐ Right only
☒ Both

Steps

☐ Frame
☒ Second
☐ Minute

Steps 1

Step 2: Correct annotation on each view

Make annotation

Left Right Confirm & Write

Revise record

Co_ID 10 Retrieve

Export

Withdraw the last record

Right panel summary

Co_ID	Frame_ID	No_Labels
3	36	
4	51	
5	66	
6	81	
7	96	
8	111	
9	126	
10	141	

1. Enter the CO_ID you want to revise.
2. Press "Retrieve" to get records.
3. Using "Step2 box" to correct annotation.

Click "Export" to export results.
** Click "Export" at least every 10 mins.

You can delete the last record and redo this frame again.

Common questions (Annotation Window).

1. Can you describe one annotation operation?

Answer: Find pigs not within the bounding box; Read its ListID; Choose ListID; Correct Bbox;

2. Do I need to click “*Show annotation*” after I correct boundary box?

Answer: You can if you want; Otherwise, You only need to click it to confirm your final results before “*Save & Close*”.

3. How to remove a pig from view?

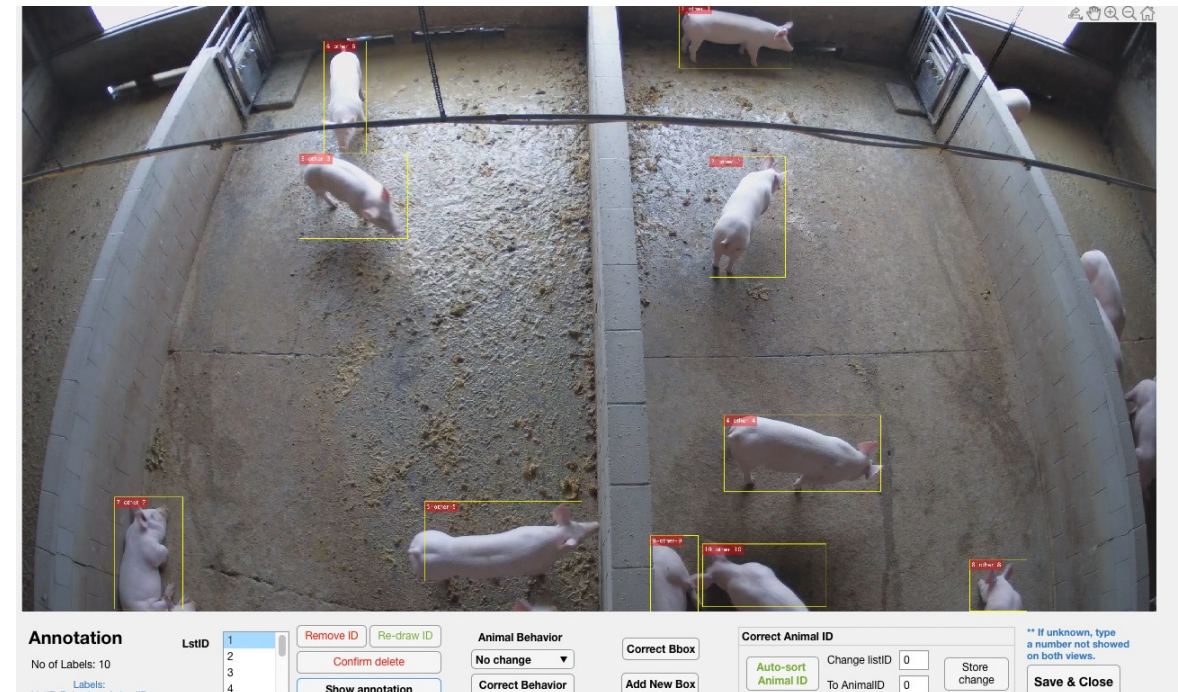
Answer: Find pig’s listID; Choose ListID; “*Remove ID*”; “*Confirm Delete*”.
**ListID will be updated.

4. How to add a pig from view?

Answer: Click “*Add New Box*”; Find blue box on upper-left corner; Correct bounding box; Correct Animal ID.
**List ID with the last listID; AnimalID should
**match with another view.

Hint:

- Use this tool to help you display image; Or you can scroll to zoom in and out when you mouse is above the image.



Hint:

- Once your finish the first coordination frames. You don’t need to change animal ID; Unless you see a new pig come to the view.

Output file format

Level-1: Output

Field ▲	Value
VideoName	'0-Pen_B.mp4'
RawAnnot	'0-Pen_B.json'
DisplayPanel	'left'
XYtype	'UpperLeft'
config	1x1 struct
FrameInfo	1x1 struct
Data	3x1 struct

Level-2: Output.config

Field ▲	Value
VideoFormat	'RGB24'
BitsPerPixel	24
NumFrames	7200
Duration	480
FrameRate	15
Height	2160
Width	3840

Level-2: Output.FrameInfo

Field ▲	Value
InitialTime	1x1 cell
FirstCordinatio...	523

Level-2: Output.Data

Fields	CO_ID	Frame_ID	Record
1	1	466	19x1 str...
2	2	481	19x1 str...
3	3	496	16x1 str...
4	4	511	4x1 struct

Level-3: Output.FrameInfo.InitialTime(1)

	1
1	2020-11-30 08:48:00

Level-3: Output.Data(1).Record

Fields	Animal_ID	Cord	Behaviour
1	2	[956;713;340;347]	'other'
2	1	[2135;381;239;315]	'other'
3	3	[752;1005;592;465]	'other'
4	4	[2372;852;534;389]	'other'
5	5	[1469;151;387;230]	'other'
6	6	[1198;475;247;366]	'other'
7	7	[1549;-1;239;162]	'other'
8	8	[1196;1127;812;313]	'other'
9	9	[1103;1418;864;312]	'other'
10	10	[700;1418;544;535]	'other'
11	11	[1133;1547;454;502]	'other'
12	12	[2159;1463;725;598]	'other'
13	14	[1147;375;216;243]	'other'
14	15	[1673;1418;609;599]	'other'
15	16	[965;1329;261;270]	'other'
16	17	[570;1667;604;356]	'other'
17	19	[1370;299;241;264]	'other'
18	30	[1900;1373;413;336]	'other'
19	31	[1615;1775;546;245]	'other'