



# Car Crash Annotation Tool

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# Apps

- For Windows user, download the .exe file
- For Ubuntu user, download the no extension file
- For Mac user, download the .zip file, and unzip it. You could see the .app Application, double click to launch it. (You may need to resolve the security issue in settings to open it)

CSCI631 - Final Project > tool ▼

Name ↑



CarCrashAnnotation



CarCrashAnnotation.app.zip



CarCrashAnnotation.exe

## Basic Function

# 01. Launch the app

Open Dir

Create New RectBox

### Basic Information

Start Frame

Crash Start Frame

End Frame

Day or Night

Weather

If Ego Involved

Ego Car Reason

## Basic Information

## File List

## Scan Image Button

Set current frame to basic frame-related info

Image Canvas

### Objects Information

Object Type

If Involved

Reason

## Object Info

BBoxes

Frame #

Coordinates

## Bounding Boxes List

Add

Type

If

Reason

B-Boxes

## Objects List

Edit

Save and Reset

## 02. Open frame directory to load frames

Open Dir

Create New RectBox

Basic Information

Start Frame

Crash Start Frame

End Frame

Day or Night

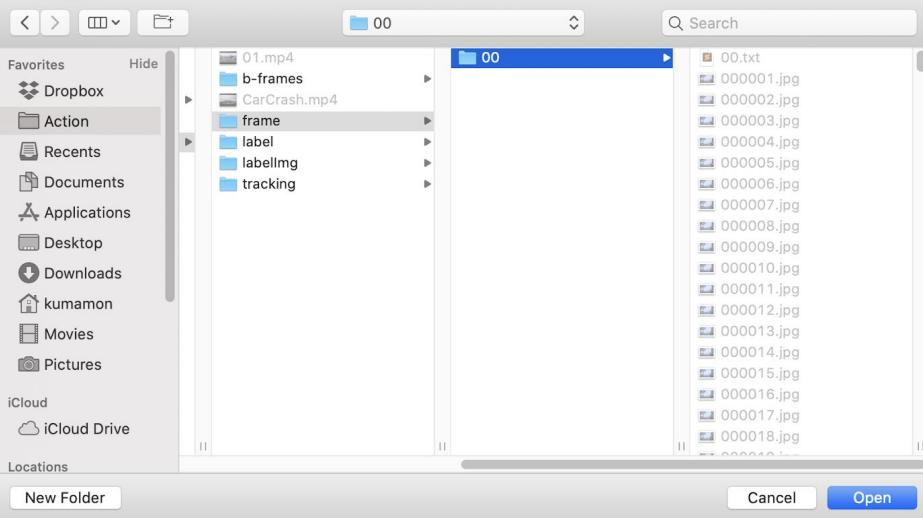
Weather

If Ego Involved

Ego Car Reason

Edit

Save



Objects Information

Object Type

If Involved

Reason

BBoxes

Frame #

Coordinates

Add

Type

If

Reason

B-Boxes

Edit

Save and Reset

<< Prev 5

< Prev

Next >

Next 5 >>

set as Start Frame

set as Crash Start Frame

set as End Frame

### 03. Annotate basic info

*You could type or click the buttons below to set the frames.*

*You could double click the filename in the bottom-left docker to access a specific file more quickly.*

*For “if ego involved” and “ego car reason”, we only have the results as follows:*

*No & none*

*Yes & no fault*

*Yes & hard to define*

*Yes & #n out of other 10 reasons listed (multiple choices)*

The screenshot shows a video analysis software interface. A blue overlay box in the top right contains the following text:

**03. Annotate basic info**

*You could type or click the buttons below to set the frames.*

*You could double click the filename in the bottom-left docker to access a specific file more quickly.*

*For “if ego involved” and “ego car reason”, we only have the results as follows:*

- No & none*
- Yes & no fault*
- Yes & hard to define*
- Yes & #n out of other 10 reasons listed (multiple choices)*

The interface includes a sidebar on the left with a file list (000108.jpg to 000118.jpg) and a 'Basic Information' section with fields for Start Frame (000001), Crash Start Frame (000111), End Frame, Day or Night (Day), Weather (Normal), If Ego Involved (Yes), and Ego Car Reason (none). The main area shows a video frame with navigation buttons (<< Prev 5, < Prev, Next >, Next 5 >>). The bottom of the interface has buttons for 'set as Start Frame', 'set as Crash Start Frame', 'set as End Frame', 'Edit', and 'Save and Reset'. A status bar at the bottom reads: 'Set current frame as the crash start frame, which means the accident is about to happen.'

#### 04. Save the basic information

*After saving, the area of basic information will be disabled.*

*You could click the edit button to edit and save again, but some other objects you labelled before will delete immediately when you click the “Edit” button.*

*Be careful, do it necessarily.*

*The save will check the format of frame label (%06d), the sequence of frame, if there are 3s before car crash and so on.*

Open Dir

Create New RectBox

Basic Information

Start Frame 000001

Crash Start Frame 000050

End Frame 000100

Day or Night Day

Weather Normal

If Ego Involved Yes

Ego Car Reason none

speedy

Edit Save

000045.jpg

000046.jpg

000047.jpg

000048.jpg

000049.jpg

000050.jpg


000051.jpg

000052.jpg

000053.jpg

000054.jpg

000055.jpg



<< Prev 5

< Prev

Next >

Next 5 >>

set as Start Frame

set as Crash Start Frame

set as End Frame

Coordinates

[490, 561...

[495, 56...

Add

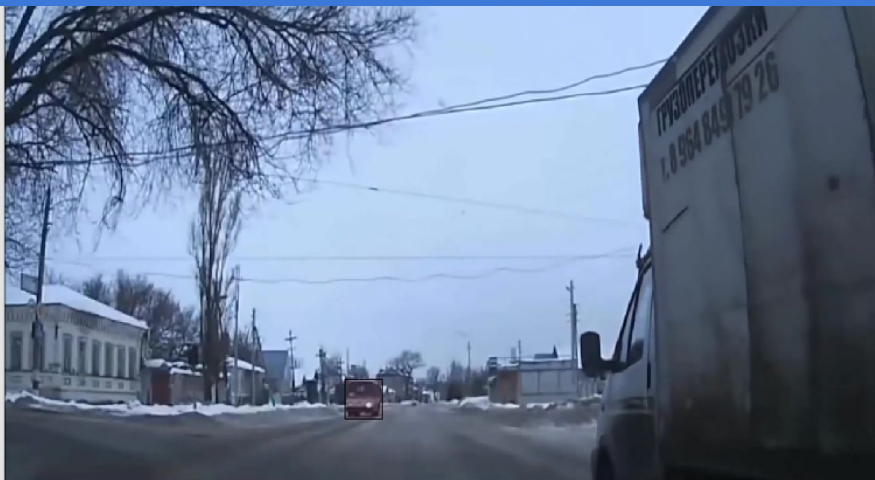
Type	If	Reason	B-Boxes

Edit Save and Reset

Add bounding box: [495, 566, 548, 622]

## 05. Start to annotate objects

*The “if involved” and “reason” have the same constraints for the ego car.*



Objects Information

Object Type

Car

If Involved

Yes

Reason

speedy

speedy

BBoxes

	Frame #	Coordinates
1	000050	[490, 56...
2	000045	[495, 56...

Add

Type	If	Reason	B-Boxes
------	----	--------	---------

Edit

Save and Reset

Open Dir

Create New RectBox

Basic Information

Start Frame

000001

Crash Start Frame

000050

End Frame

000100

Day or Night

Day

Weather

Normal

If Ego Involved

Yes

Ego Car Reason

none

speedy

Edit

Save

000045.jpg

000046.jpg

000047.jpg

000048.jpg

000049.jpg

000050.jpg

000051.jpg

000052.jpg

000053.jpg

000054.jpg

000055.jpg

## 05. Start to annotate image - bounding box

Open Dir

Create New RectBox

Basic Information

Start Frame

Crash Start Frame

End Frame

Day or Night

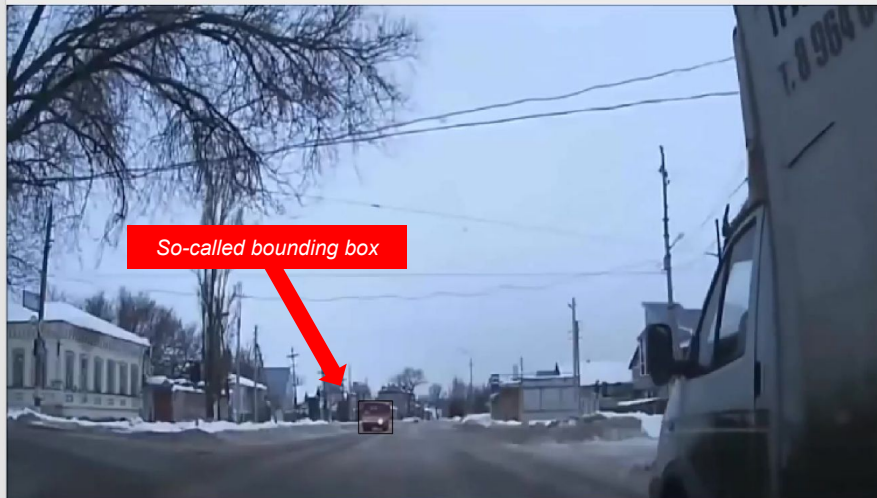
Weather

If Ego Involved

Ego Car Reason

Edit Save

000015.jpg  
000016.jpg  
000017.jpg  
000018.jpg  
000019.jpg  
000020.jpg  
000021.jpg  
000022.jpg  
000023.jpg  
000024.jpg  
000025.jpg



Objects Information

Object Type

If Involved

Reason

BBoxes

	Frame #	Coordinates
1	000050	[490, 561...
2	000045	[495, 56...
3	000040	[495, 56...
4	000035	[500, 56...
5	000030	[500, 56...

Add

1. Go to the frame you want to label
2. Click "Create New RectBox"
3. Drag and release cursor in the canvas
4. The coordinates will be saved automatically on the bbox list. If you are not satisfy with the current labelled bounding box, click "Create New RectBox" and draw the bounding box again, the coordinates will be updated.



Open Dir

Create New RectBox

Basic Information

Start Frame

000001

Crash Start Frame

000050

End Frame

000100

Day or Night

Day

Weather

Normal

If Ego Involved

Yes

Ego Car Reason

none

speedy

Edit

Save

000015.jpg

000016.jpg

000017.jpg

000018.jpg

000019.jpg

000020.jpg

000021.jpg

000022.jpg

000023.jpg

000024.jpg

000025.jpg

06. Click “Add” button to save an object to the list

Constraints:

Say the “Crash Start Frame” is 000050, the labelled frames should be in [00005, 000010, ..., 000050] (valid frames)

For objects NOT involved in the car accident, label them when it appears in the frame in those valid frames.

For objects involved in the car accident, label them in sequence (include the Crash Start Frame).

The number of labelled frames for objects involved in the car accident should be at least 6, at most 10.

Objects Information

Object Type

Car

If Involved

Yes

Reason

speedy

BBoxes

Frame #

Coordinates

Add

	Type	If	Reason	B-Boxes
1	Car	Yes	['speedy']	{'000015': '[51...

Edit

Save and Reset

<< Prev 5

< Prev

Next >

Next 5 >>

set as Start Frame

set as Crash Start Frame

set as End Frame

Successfully add an object to object list!

**Click the [Save and Reset] to save all the objects information and reset all the forms.**

Open Dir

Create New RectBox

Basic Information

Start Frame

000001

Crash Start Frame

000050

End Frame

000100

Day or Night

Day

Weather

Normal

If Ego Involved

Yes

If Other Car Reason

none

speedy

Edit

Save

000015.jpg

000016.jpg

000017.jpg

000018.jpg

000019.jpg

000020.jpg

000021.jpg

000022.jpg

000023.jpg

000024.jpg

000025.jpg



<< Prev 5

[< Prev](#)

Next >

Next 5 >>

set as Start Frame

set as Crash Start Frame

set as End Frame

Edit

Save and Reset

Successfully add an object to object list!

# Saved File

The file will be saved in the same directory where you loaded frames, named as the folder name, in .txt format.

In annotation file, for each clip:

First Line: `start,crashStart,end,dayOrNight,weather,ifEgoInvolved,egoReasons`

Other Lines: `objectType,ifObjInvolved,objReasons,{frame_num: bbox}`

If you have already saved the info but there are something wrong, you could delete the corresponding contents in the .txt file and relabel that clip.

Be careful when you try to edit the annotation file. (Hope you never encounter in the situation)

00.txt

```
000001,000050,000100,Day,Normal,Yes,['speedy']
Car,Yes,['speedy'],{'000015': '[512, 573, 560, 618]',
'000020': '[509, 569, 560, 618]', '000025': '[509, 569,
555, 618]', '000030': '[500, 568, 553, 622]', '000035':
'[500, 566, 553, 618]', '000040': '[495, 564, 550,
620]', '000045': '[495, 566, 548, 622]', '000050':
'[490, 561, 550, 625]'}
```

# Shortcuts

Open Dir	Ctrl + O
Create BBox	Ctrl + B
Prev 5	A
Prev	S
Next	D
Next 5	F

If you want to delete some labelled contents in the reason lists, bounding box list, objects list,

1. Select the item (just select one cell)
2. Press [Delete] or [Backspace]

Again, if you are not satisfied with labelled bounding box, you could just click “Create BBox” on that frame and label it again. The bounding box for that frame in the bounding box list will be updated.

# Issues

- The bounding box does not respond for resizing the window.
  - The labelled bounding box has already saved (coordinates relative to original size of the image). It's okay to resize the window once or twice while you're doing the annotation.
  - Resize the window size when necessary. Don't do it on purpose.
- Windows:
  - There are a lot of pop-up window reminders. Sometimes, for some reasons, the pop-up window doesn't appear in the front of the annotation.
  - If you feel that there's no response. Check if there is a pop-up window in the background.
- Mac:
  - The response for action seems to delay, like you clicked "set as Start Frame", but the blank for start frame is not updated immediately.
  - The information is indeed updated. It just doesn't show. Actually, we tested on different Mac machines, only one machine has this problem. Hope you are the lucky ones.

# Note

- **DO NOT try to break the tool.** Just follow the steps and make the annotation task easier.
- **DO NOT change the downloaded folder name.** The output will be saved as the directory name.
- If you have any questions regarding the annotation task, don't hesitate to send me an email, or ask for a meeting. (hh7702@rit.edu)
- If you want to increase the user experience of the annotation tool, feel free to give comments, and welcome to contribute!

# Other Resources

## Annotation tools

- [NVivo qualitative data analysis software](#)
- [Boris: Behavioral Observation Research Interactive Software](#)
- [tzutalin/labellmg: !\[\]\(36f8637baaa56c4be44b454435949289\_img.jpg\) Labellmg is a graphical image annotation tool and label object bounding boxes in images](#)
- [Labelbox: The leading training data solution](#)
- [Supervisely - Web platform for computer vision. Annotation, training and deploy](#)
- [Visual Geometry Group](#)

## Video processing

- [FFmpeg](#)