A tool for Automatic generation and annotation of a French traffic signs dataset for deep learning

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Introduction

1. Traditional methods

- detection based on color, texture, edges, and other low level features

2. Deep Learning/Machine Learning algorithms

Approaches

1. Transfer Learning

- using the knowledge model learned in one task to improve the generalization of another task.

2. Haar Cascade

- is an efficient machine learning object detection approach that it is used to recognize objects in videos or images.
- is trained using so many negative and positive images.

Code Explanation

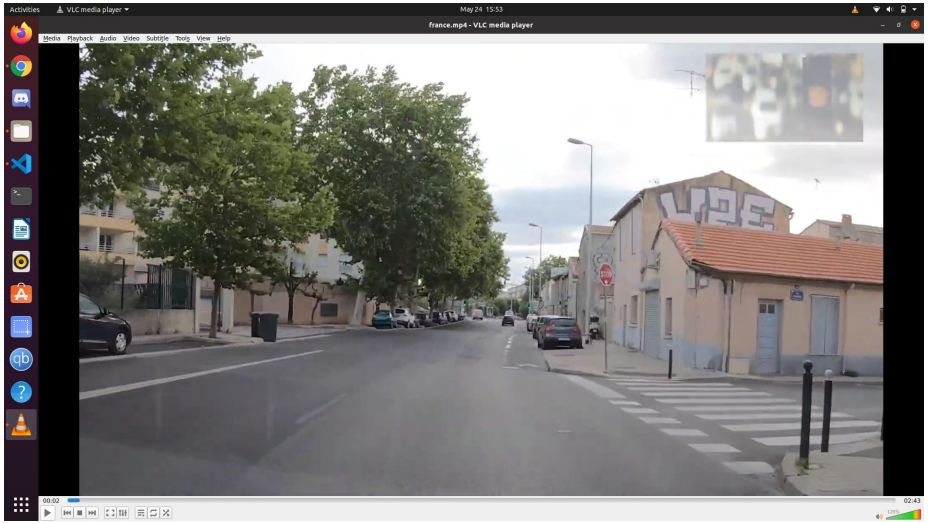
1. functions.py -- consist of libraries and functions.

- os, cv2, copy, numpy, csv, shutil, natsort
- create_dir(...)
- create_file(...)
- img_properties(...)

2. main.py -- detects traffic signs with importing functions.

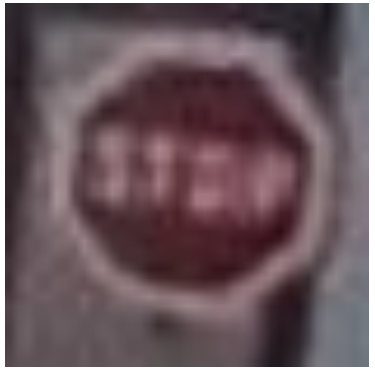
3. write_csv.py -- writes properties (Width, Height, X1, Y1, X2, Y2, ClassID, Image_Path) of extracted sign images to csv file.

Results


Activities
VLC media player
May 24 15:53
france.mp4 - VLC media player
Media Playback Audio Video Subtitle Tools View Help
00:02
02:43

Results




Results - csv file

	Width	Height	X1	Y1	X2	Y2	ClassID	Image_Path
0	61	61	5	5	56	56	1	image/stop_img/img_0.ppm
1	63	63	5	5	58	58	1	image/stop_img/img_1.ppm
2	63	63	5	5	58	58	1	image/stop_img/img_2.ppm
3	68	68	5	5	62	62	1	image/stop_img/img_3.ppm
4	67	67	5	5	61	61	1	image/stop_img/img_4.ppm
5	76	76	6	6	70	70	1	image/stop_img/img_5.ppm
6	66	66	5	5	60	60	1	image/stop_img/img_6.ppm
7	66	66	5	5	60	60	1	image/stop_img/img_7.ppm
8	70	70	5	5	64	64	1	image/stop_img/img_8.ppm
9	72	72	6	6	66	66	1	image/stop_img/img_9.ppm
10	70	70	5	5	64	64	1	image/stop_img/img_10.ppm
11	79	79	6	6	72	72	1	image/stop_img/img_11.ppm
12	80	80	6	6	73	73	1	image/stop_img/img_12.ppm
13	86	86	7	7	79	79	1	image/stop_img/img_13.ppm
14	93	93	7	7	85	85	1	image/stop_img/img_14.ppm
15	68	68	5	5	62	62	1	image/stop_img/img_15.ppm
16	68	68	5	5	62	62	1	image/stop_img/img_16.ppm
17	79	79	6	6	72	72	1	image/stop_img/img_17.ppm
18	78	78	6	6	71	71	1	image/stop_img/img_18.ppm
19	74	74	6	6	68	68	1	image/stop_img/img_19.ppm

Drawbacks

- Lack of data(in this case images)
- To train each sign

Conclusion

- Width, Height of the image
- X1, Y1, X2, Y2: are the two points from which the sign (ROI) is properly framed

Thanks for your attention