Real – time rear light vehicle detection based on YOLO

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Abstract: A collision with a vehicle in front is an important area of activity for ensuring road safety and preventing road accidents. In this case, the correct detection of rear light signals is an important task. This task will be implemented using yolo detection.

Key words: *Vehicle detection, YOLO, HOG, brake lights recognition, image processing, computer vision*

Project idea and dataset

The system will analyze light signal from the car in front on realtime video. Project's system will consider:

1) Car tracking by HOG or YOLO. In this part we need to find best solution and implement it

2) In second part we will try to find new approach or combine existed ones to recognize lights on the back side of car.

3) Analyze the state of light (brakes enables or not)

If we will have enough time we will also try analyze turning signals.

The training dataset is represents a set of images 64 by 64 pixels:

Fig.1 The dataset for training data

The output will be video with labeled car signals

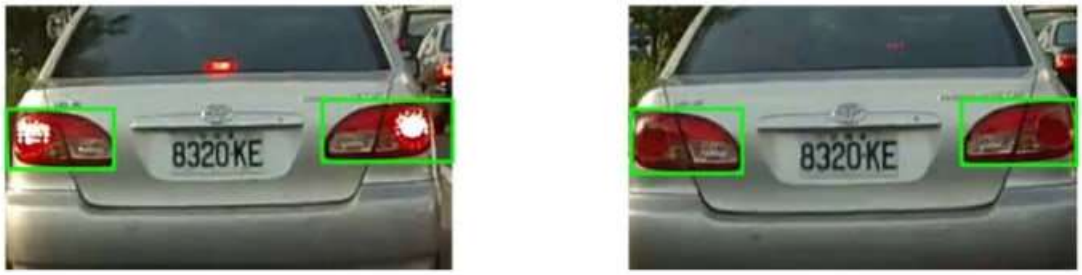

Fig. 2 approximate result of the work

Timeline with individual tasks of each member

Due 16 th of February:

literature research and analyze existing methods

Due 23 rd of February:

Zanina Valeriya – implement car detection on video

Ivanov Sergey – recognize taillight on the car image

Due 9 th of March:

Zanina Valeriya – analyze the meaning of light , writing report

Ivanov Sergey – combine work in a single project and start to try analyze turning signals

References

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2. Rear lights vehicle detection for collision avoidance, E. Skodras, G. Siogkas, +1 author N. Fakotakis,Computer Science,2012 19th International Conference on Systems, Signals and Image Processing (IWSSIP)