

Lab3

Notebook Link [link to the notebook](#)

Methodology

I created a matching score matrix **M** as follows

- $M[i, j] = \text{iou_overlap}(i, j)$
- $M[i, j] = 0$ if $M[i, j] < T$

Where $\text{iou_overlap}(i, j)$ calculates box over union intersection between box i and box j and T is a threshold and it is set to 0.4

And For the best match j_best (which is the index for object in the second image that match i in the first image) can be found by

- $j_best = \text{argmax}(M[i, j])$
- If the i th row in **M** is all zero this j_best is ignored, because it means we didn't find a match for i .
- Also if j_best is already assigned to a previous object with index $k < i$ we ignore it.

For the detection model I implemented **mask_rcnn_R_101_FPN_3x**.

Tracking a pair of images

Beginning



Figure 1 : frame 1



Figure 2 : frame 2

Middle

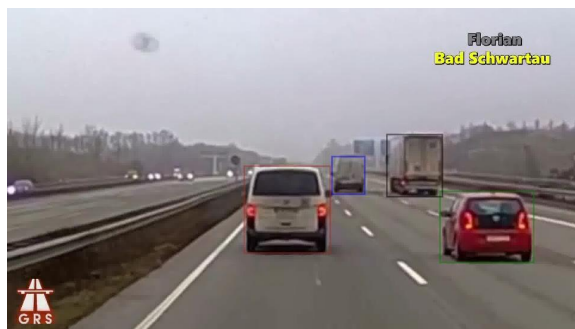


Figure 3 : frame 10

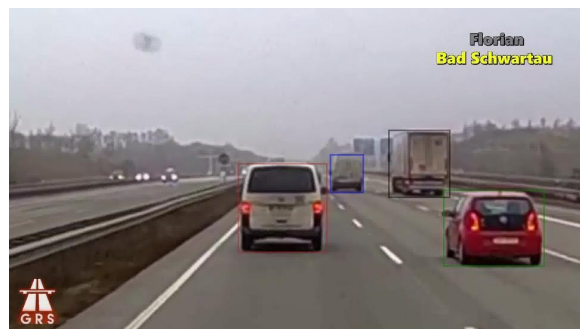


Figure 4 : frame 11

End



Figure 5 : frame 30



Figure 6 : frame 31

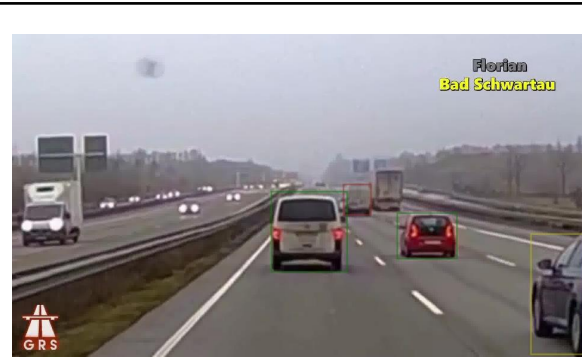
Tracking ten images



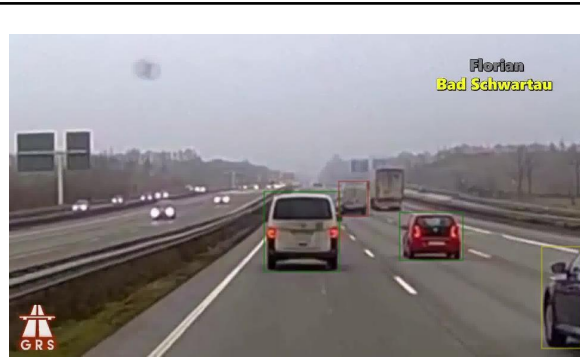
Frame 1



Frame 2



Frame 3



Frame 4



Frame 5



Frame 6



Frame 7



Frame 8



Frame 9



Frame 10

We observe from the above figures that some cars are not detected (especially the ones to the left), also there are some cars that the model couldn't track for a number of frames.