Video surveillance for road traffic monitoring

WEEK 1

Team 2

Mandatory Tasks

TASK 1

	Test A	Test B
True Positive	569 355	312 799
True Negative	14 204 946	14 351 220
False Positive	151 082	4 808
False Negative	84 229	340 785
Precision	0.7903	0.9849
Recall	0.8711	0.4786
F1 Score	0.8287	0.6442

TASK 2

Test A

Segmentation of **Test A** has a higher recall because foreground pixels (also called true positive) are detected accurately. Moreover, there is a misclassification regarding the background pixels (named false negative), since some of them have been classified as foreground regions. Due to this fact, the precision decreases a bit.

Test B

By contrast, **Test B** segmentation has a lower FP ratio that allows a higher precision rate. In addition, the noise is eliminated at the expense of losing a lot of information (higher FN). Because of that, the recall is lower (approximately half of the previous segmentation).
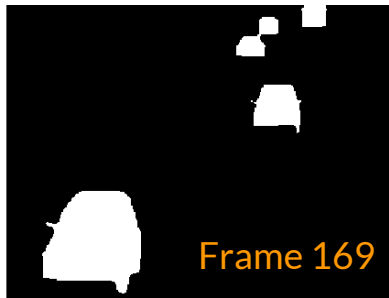
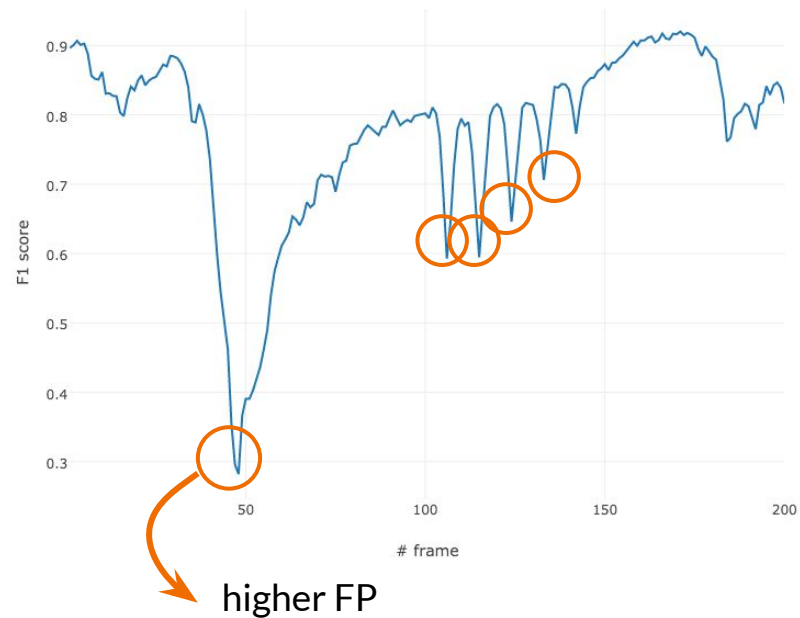# TASK 3 F1 Score vs # frames

Result
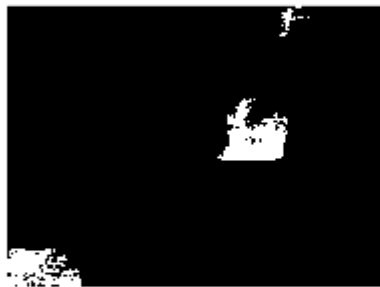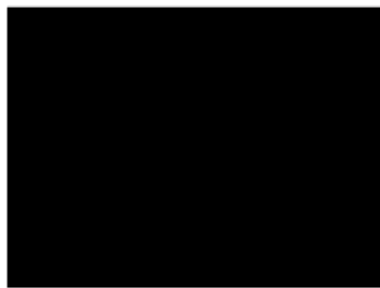
Ground truth

Frame 50

Frame 169

Test A

higher FP

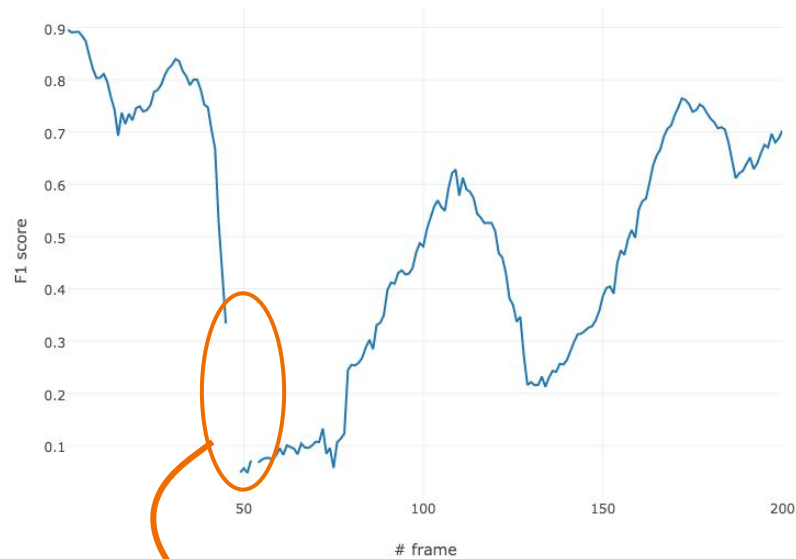# TASK 3 F1 Score vs # frames

Result

Ground truth

Frame 48

Frame 183
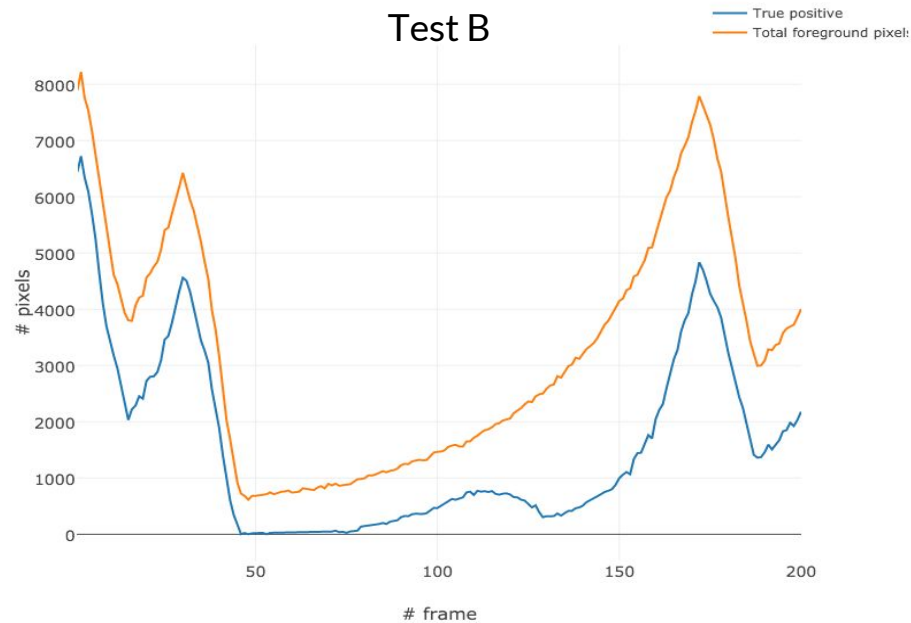
Test B
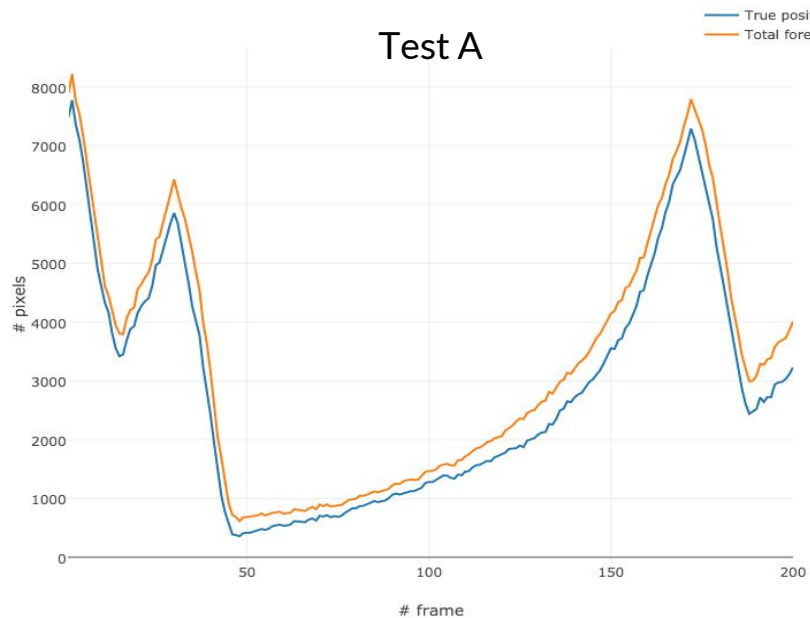

no objects detected (higher FN)

TASK 3 True Positive & Total Foreground pixels vs #frame

TASK 4 & 5

Sequence	MSE
45	
157	

Sequence	PEPN
45	0.2832
157	0.4255

The *Mean Square Error* represents the mean difference between the motion vector estimation and the ground truth.

The *Percentage of Erroneous Pixels* represents the percentage of pixels where the error between the motion vector estimation and the ground truth is greater than 3.

TASK 4 & 5

Possible sources of this errors could be:

Sequence 45:
- Large position difference (high speed), meaning some pixels are not found in the second image.
- Slight illumination change.
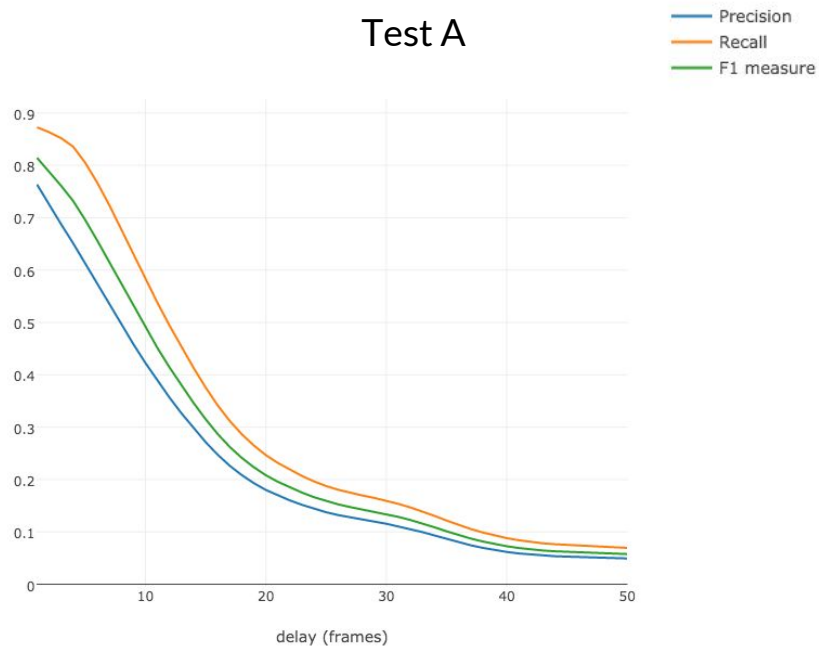- Areas that are very homogeneous cause that some pixels

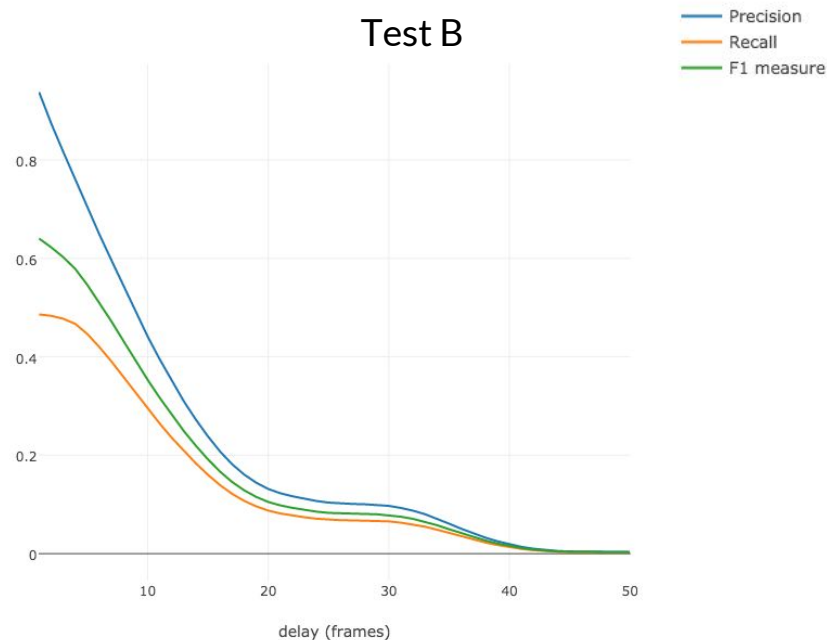Sequence 157:
-

Optional Tasks

TASK 6 De-synchornized results

Test A

Test B

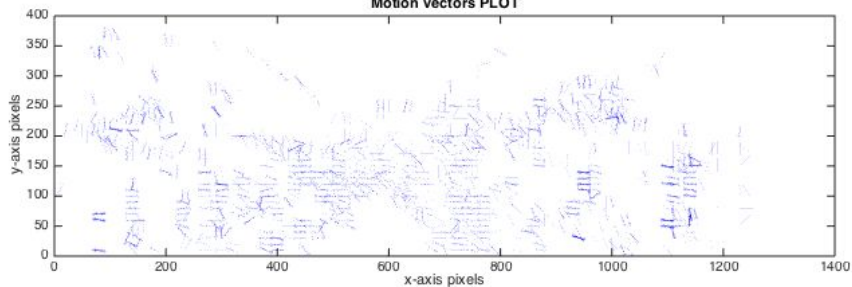Test B segmentation depends on time instances.

TASK 7

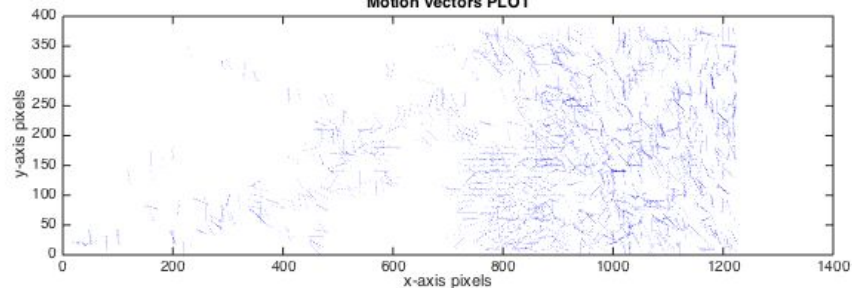
REAL image + Motion vectors

REAL image + Motion vectors

Motion vectors PLOT

Motion vectors PLOT

Result: LKflow_000045_10.png

Result: LKflow_000157_10.png