

Artificial Vision - Project 5

Face detection with a sliding window

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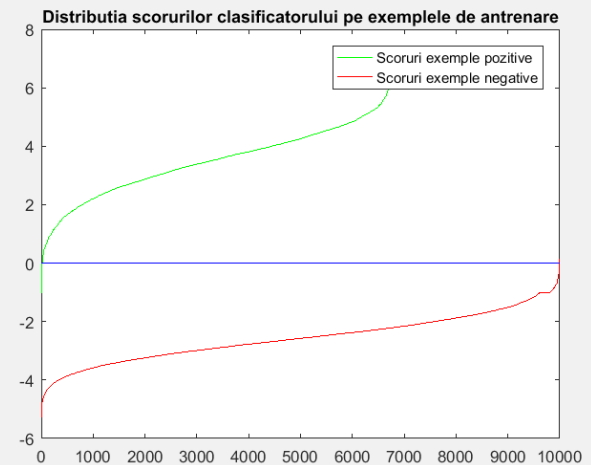
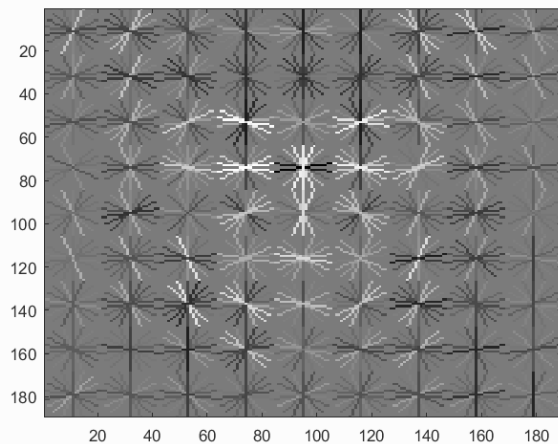
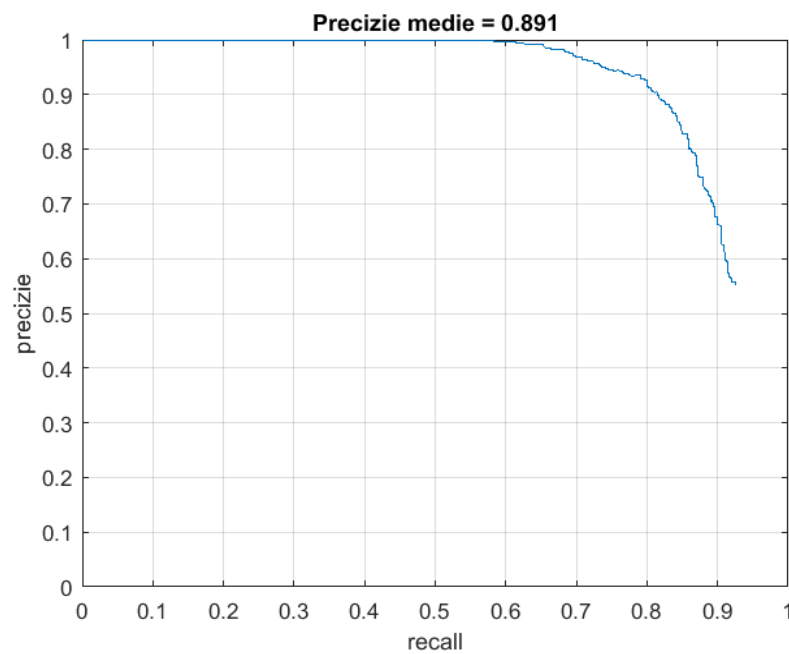
Realized experiments

1.

Parameters:

- dimension of the HOG cell: 4px
- threshold: 0.8
- number of positive samples: 6713
- number of negative samples: 10000

Average precision:

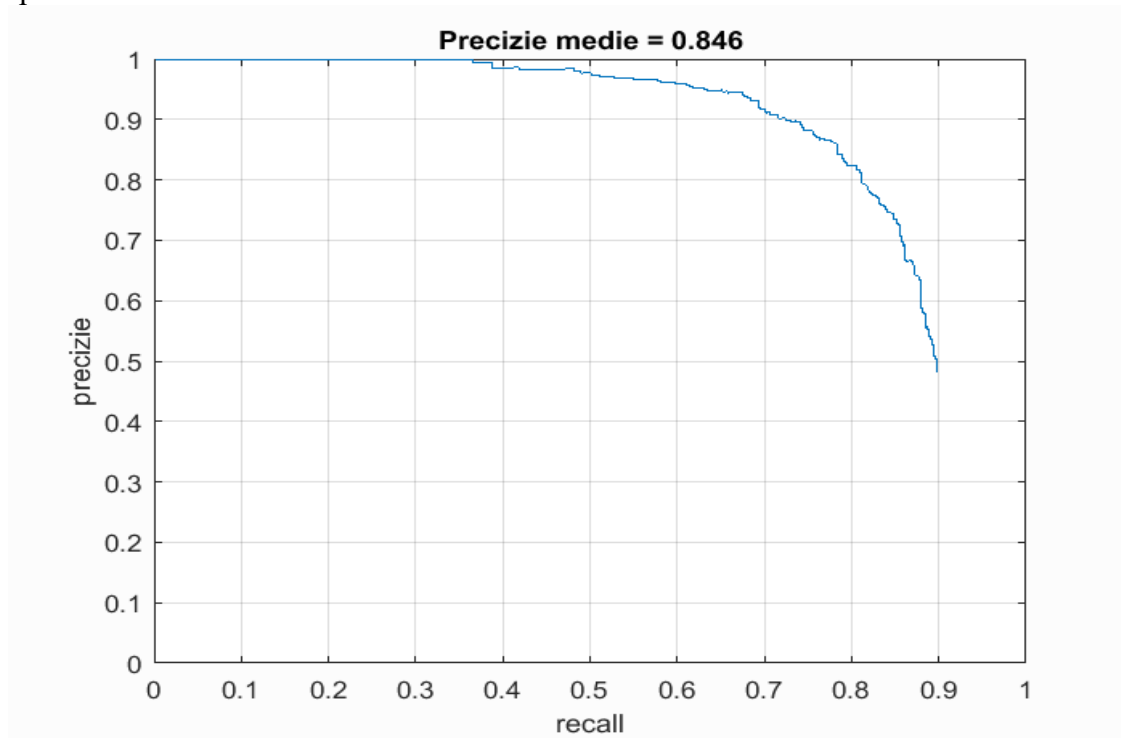


2.

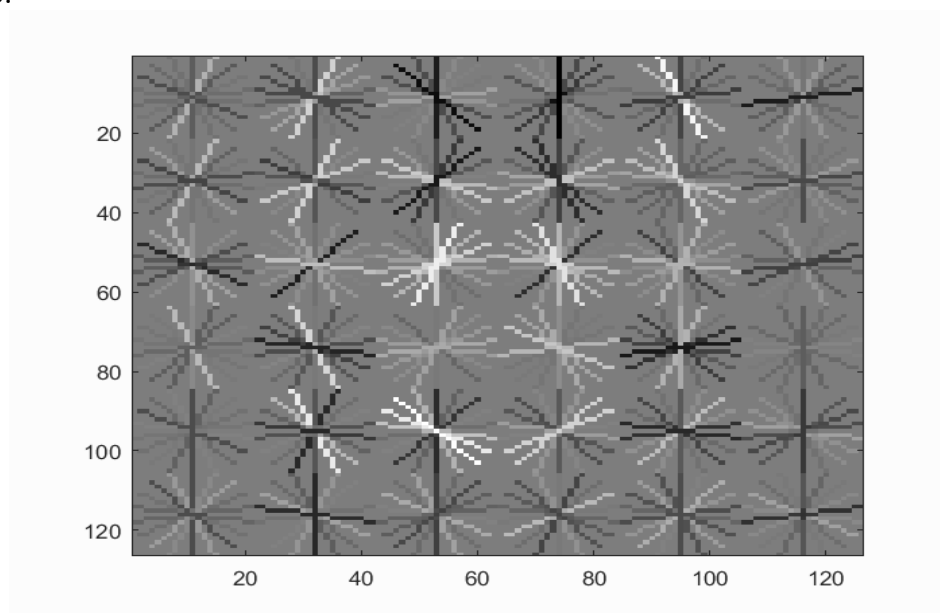
Parameters:

- dimension of the HOG cell: 6px
- threshold: 0.8
- number of positive samples: 6713
- number of negative samples: 10000

Average precision:



HOG template:

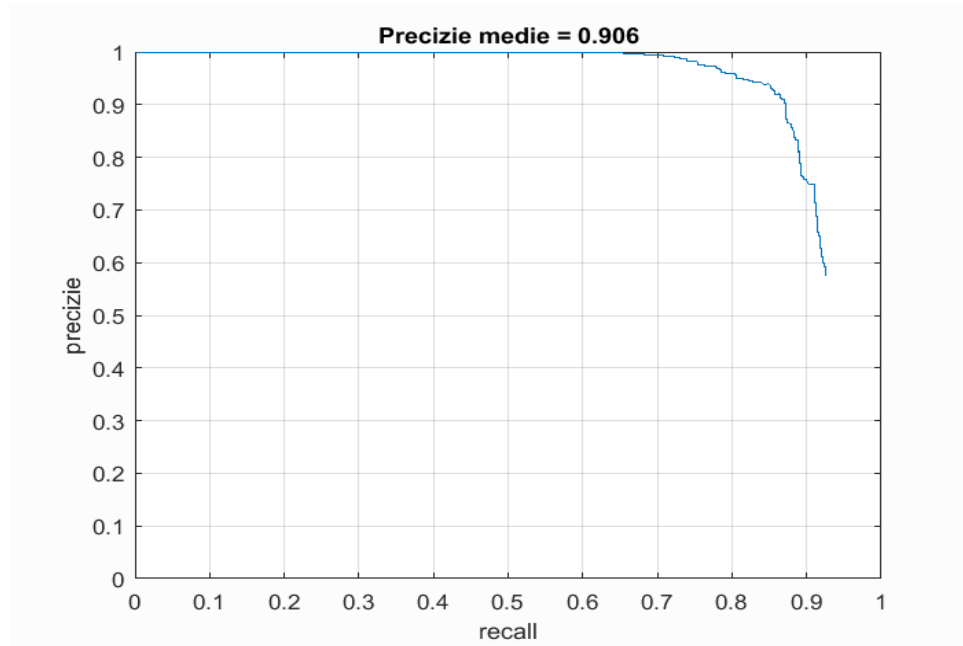


3.

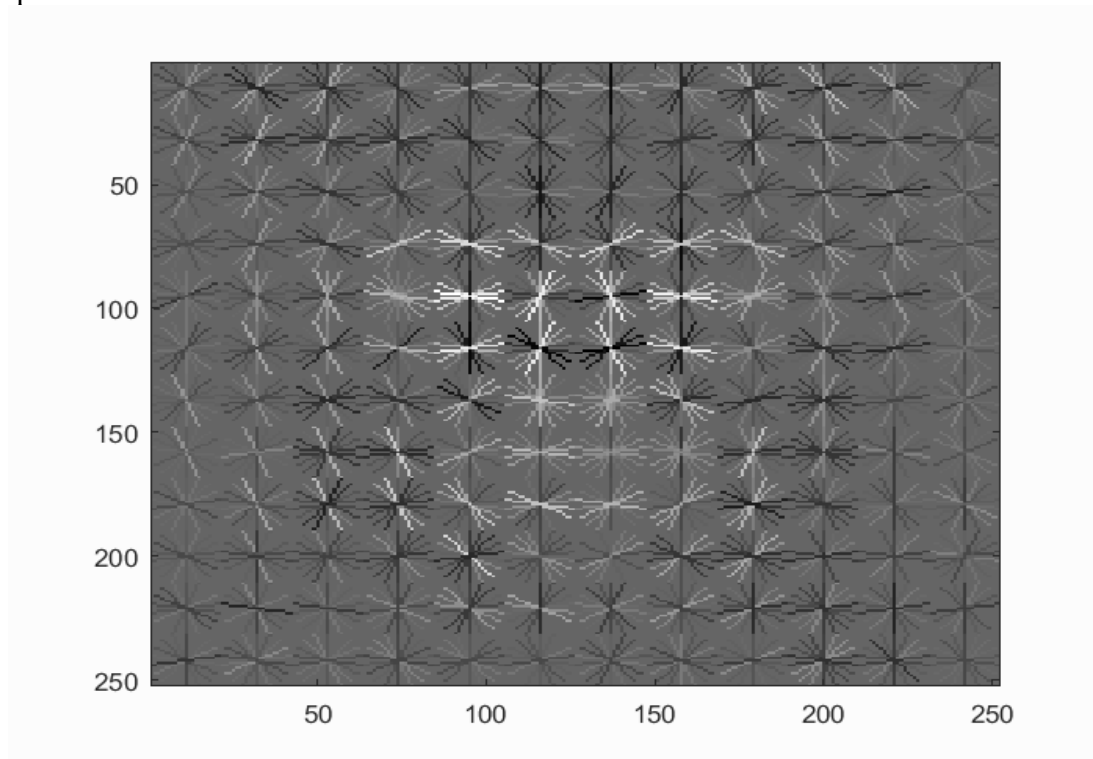
Parameters:

- dimension of the HOG cell: 3px
- threshold: 0.85
- number of positive samples: 6713
- number of negative samples: 10000

Average precision:



HOG template:

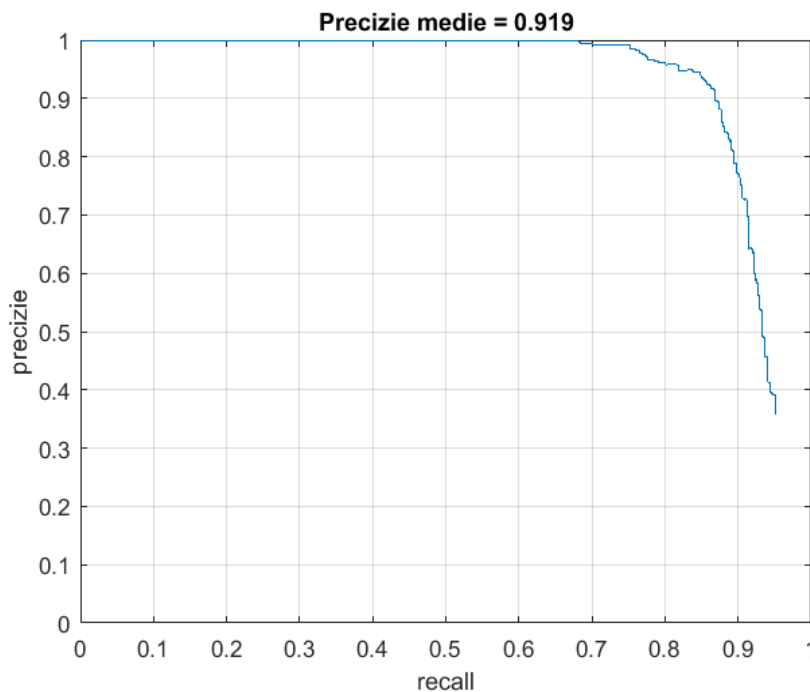
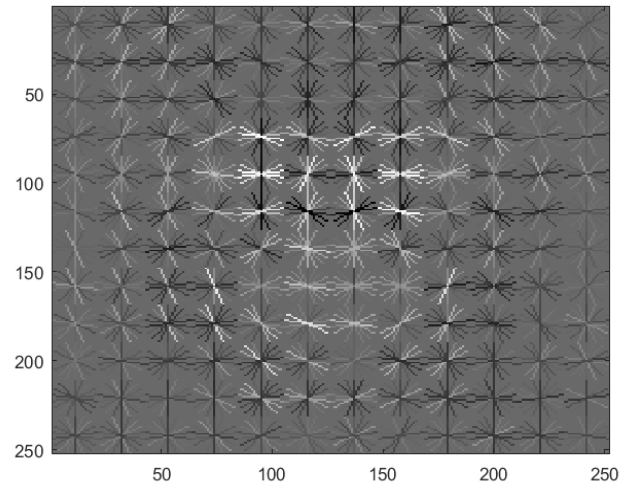


Best result:

The best result were obtained using the following parameters:

- dimension of the HOG cell: 3px
- threshold: 0.7
- number of positive samples: 6713
- number of negative samples: 10000

Average precision and HOG template:



Conclusions:

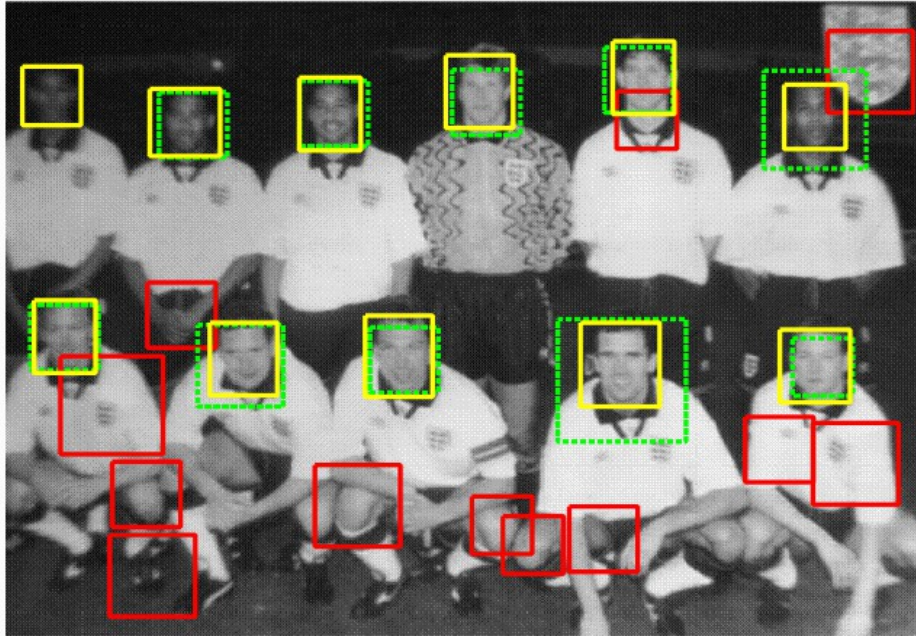
- I have tested different parameters for the HOG cell size and the threshold.
- For the HOG cell I used cell size values of 3,4 and 6 pixels and I observed that when reducing the cell size the accuracy increases and also the time of running the image analyze.
- As it can be observed on the HOG cell templates above, the facial features are finer as the cell size decreases.
- For the threshold, when using a too small value there will be more wrongly detected faces but also a too high value of the threshold may end up not being able to detect blurry or small faces.
- For the size of 3px of the HOG cell, the best threshold was 0.7 with a final accuracy of 91.9%.

Facial detection

1. On the initial set of images

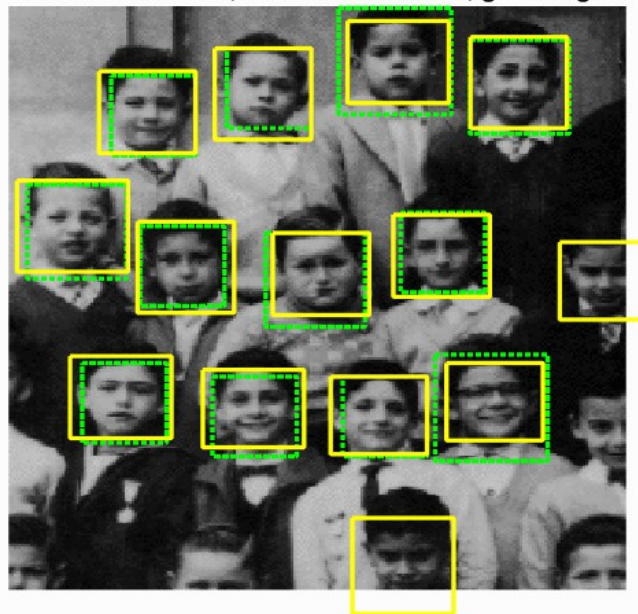
a.

"England.jpg" (verde=detectie adevarata, rosu=detectie falsa, galben=ground-truth adnotat), 10



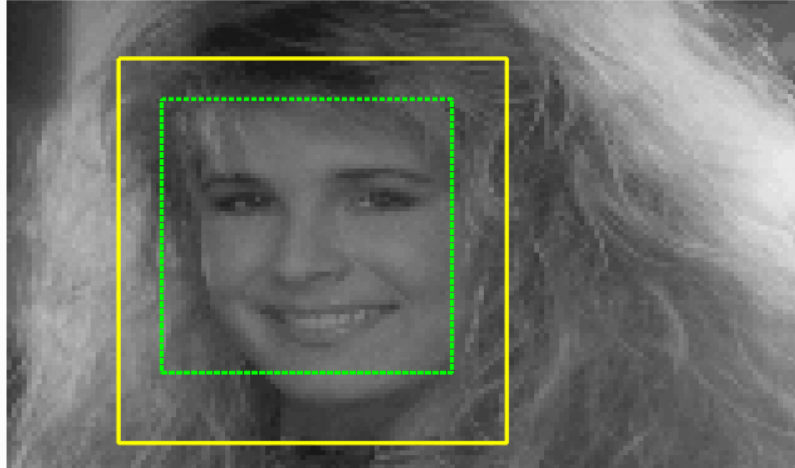
b.

a: "nens.jpg" (verde=detectie adevarata, rosu=detectie falsa, galben=ground-truth adnotat), 12/1



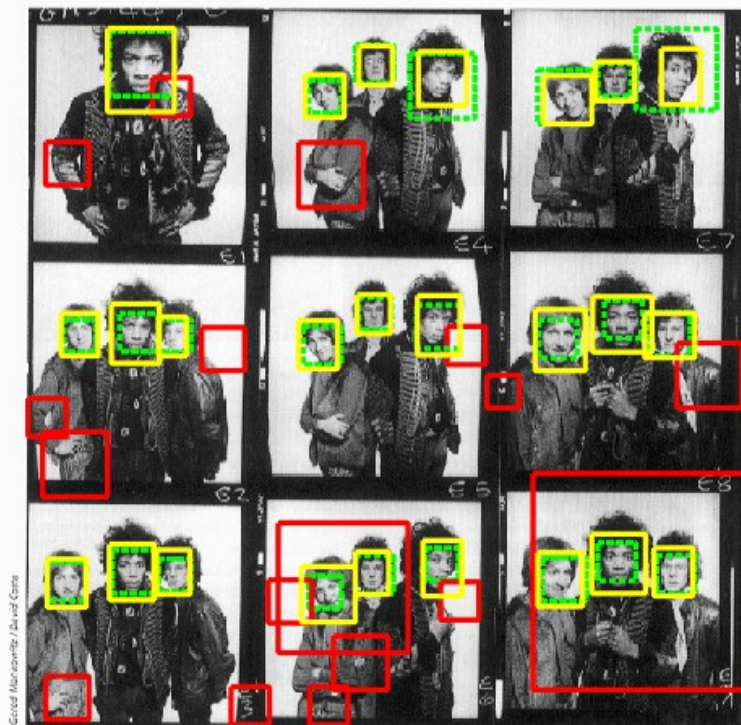
c.

: "kymberly.jpg" (verde=detectie adevarata, rosu=detectie falsa, galben=ground-truth adnotat), 1



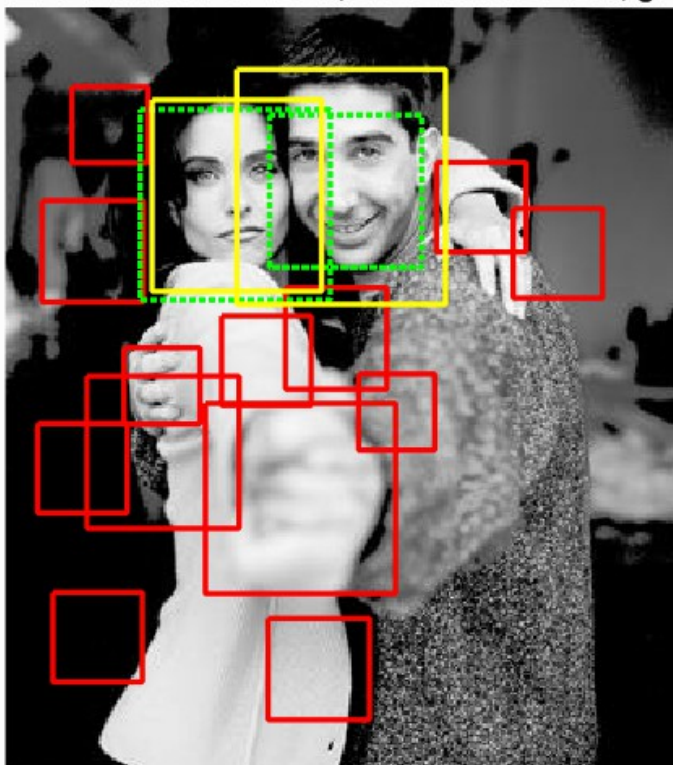
d.

"ndrix1-bigger.jpg" (verde=detectie adevarata, rosu=detectie falsa, galben=ground-truth adnotat)



e.

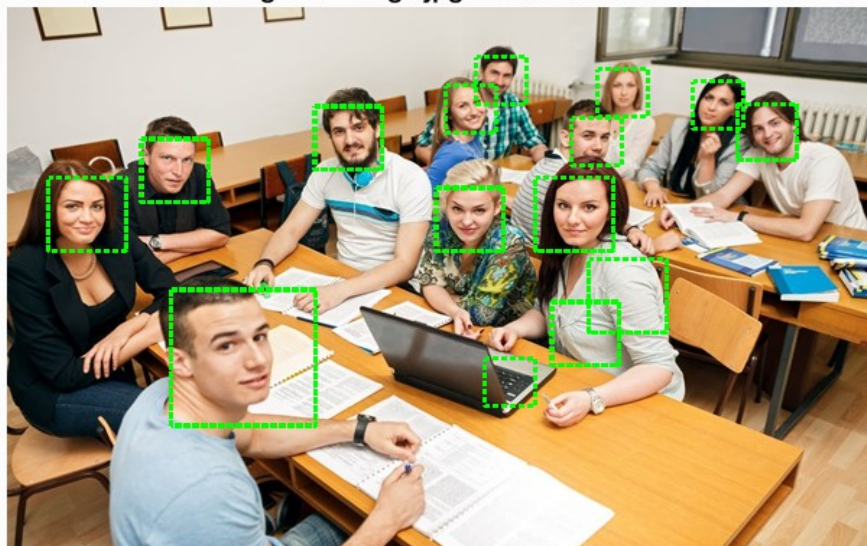
/-courtney-david.jpg" (verde=detectie adevarata, rosu=detectie falsa, galben=ground-truth adnot



2. On class images

a.

Imaginea: "img6.jpg" verde=detectie



b.



c.



d.

