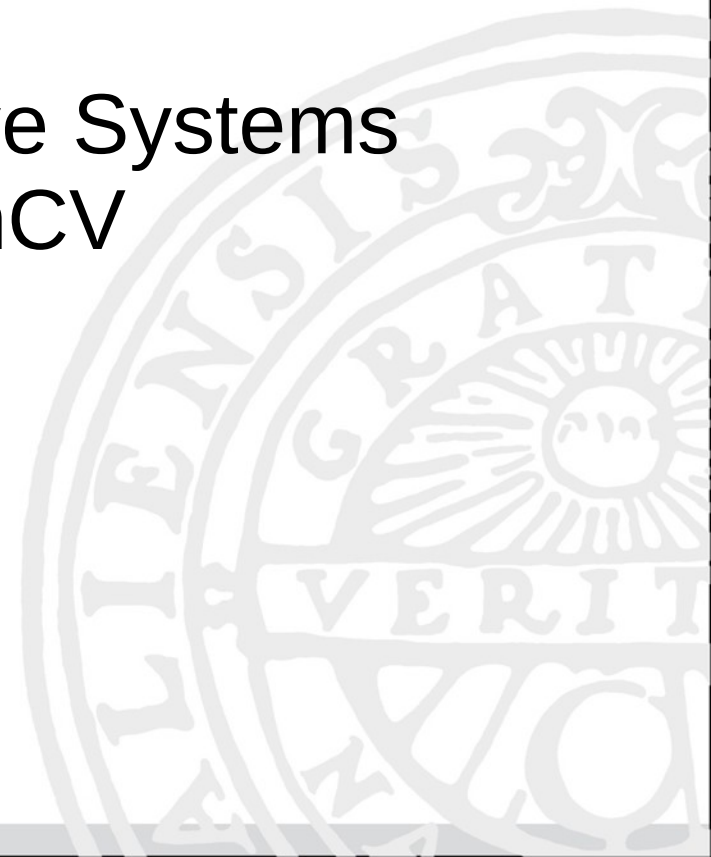




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# Intelligent and Interactive Systems

## Tutorial 1 : OpenCV



## Basic OpenCV

```
import cv2

img = cv2.imread('some_image.jpg', 0)
cv2.imshow('image', img)
cv2.waitKey(0)
cv2.destroyAllWindows()

img = manipulateImage(img)

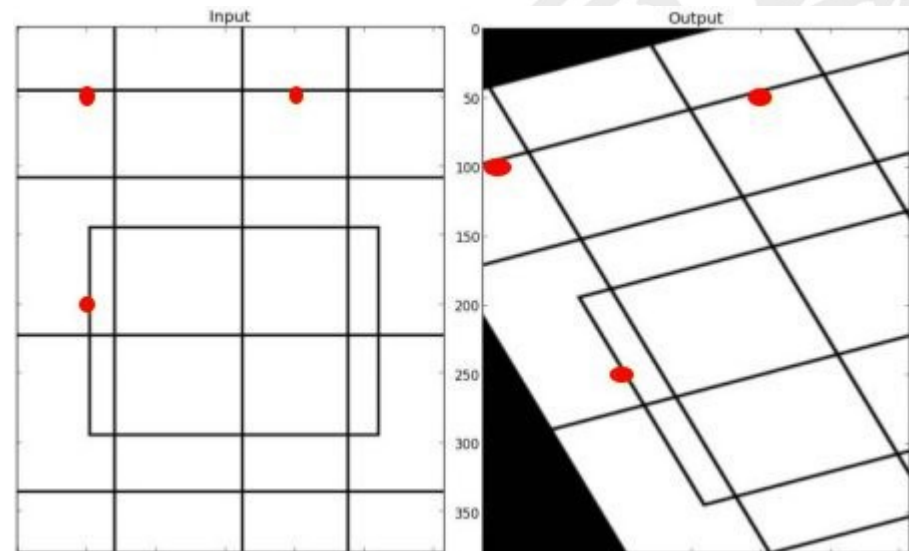
cv2.imwrite('another_image.png', img)
```





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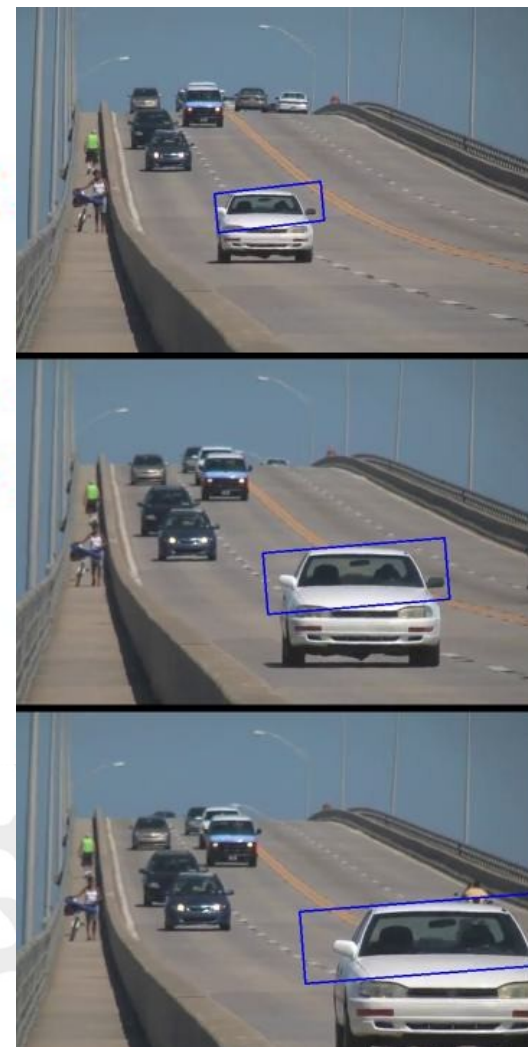
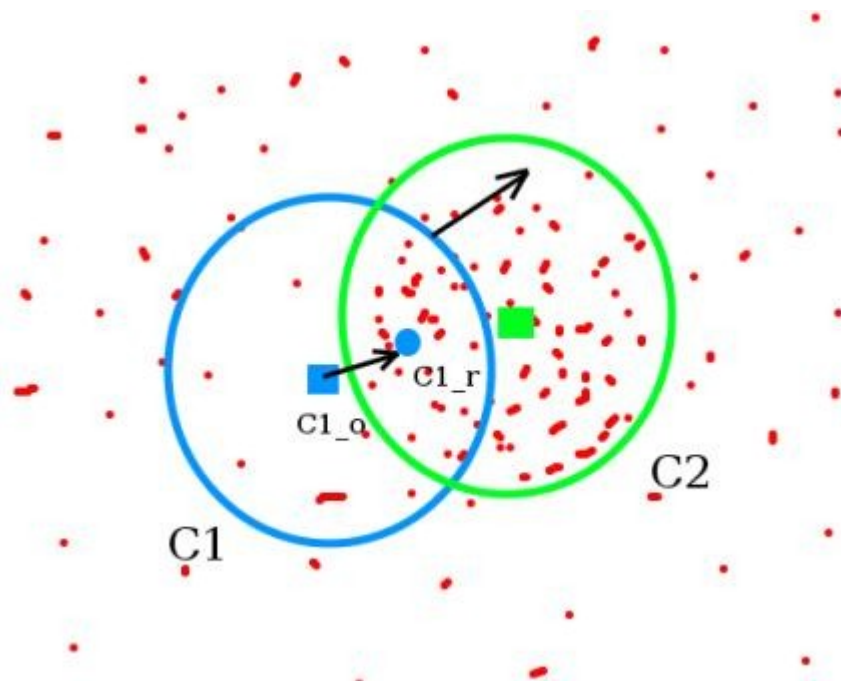
## Basic image manipulation





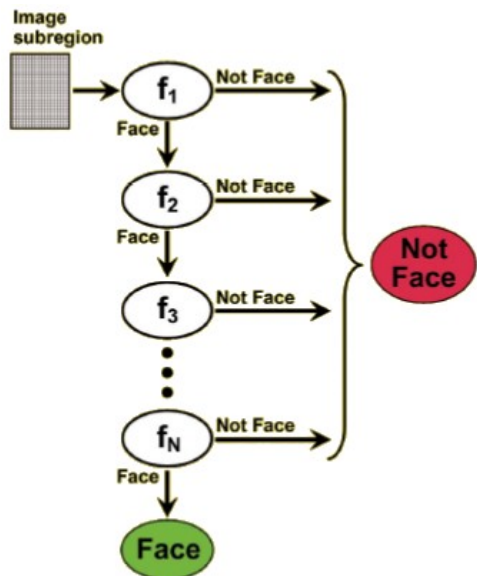
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## Mean/Cam-shift





## Scale pyramid & cascading classifier



100%

Stage 1

75%

Stage 2

56%

Stage 3

42%

Stage 4

31%

Stage 5

6%

Stage 10

1%

Stage 15

0,003%

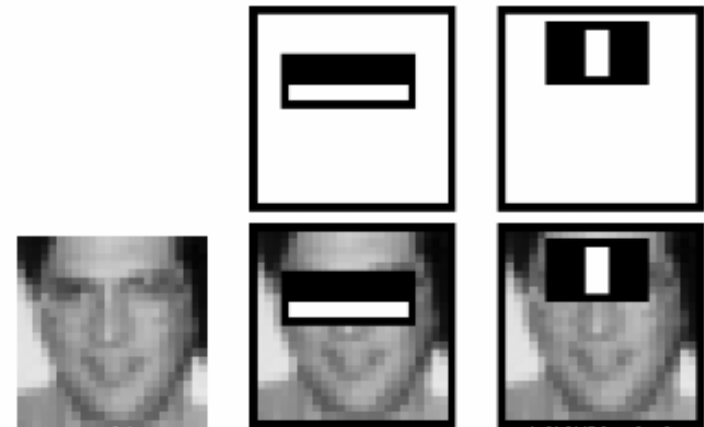
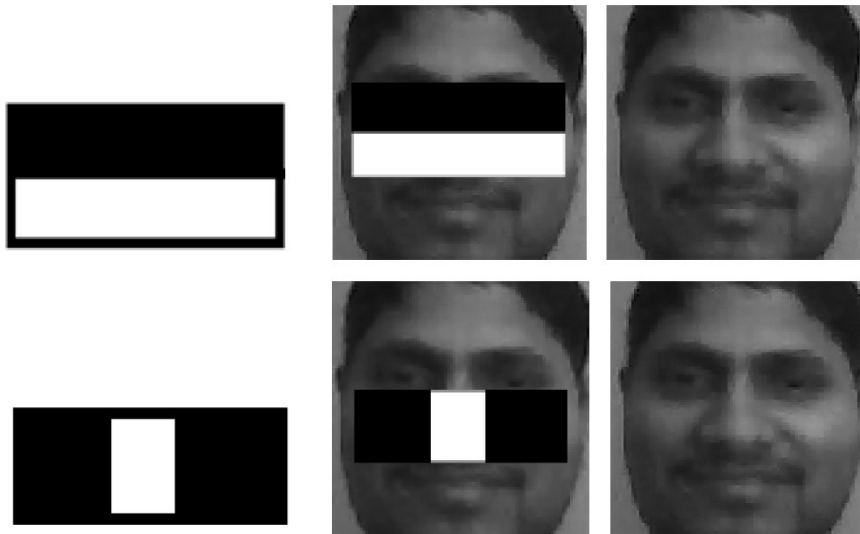
Stage 20

0,0002%

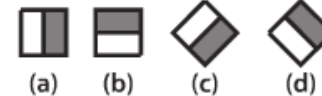
Stage 30

## Haar-like features

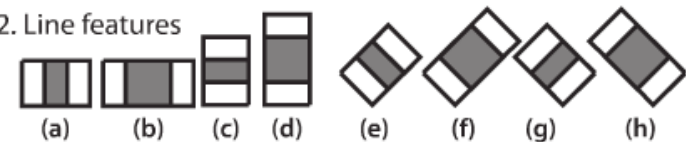
1. Convert to grayscale
2. Calculate integral image
3. Profit



### 1. Edge features



### 2. Line features



### 3. Center-surround features

