# Sesión 12. 16/05

## Local features

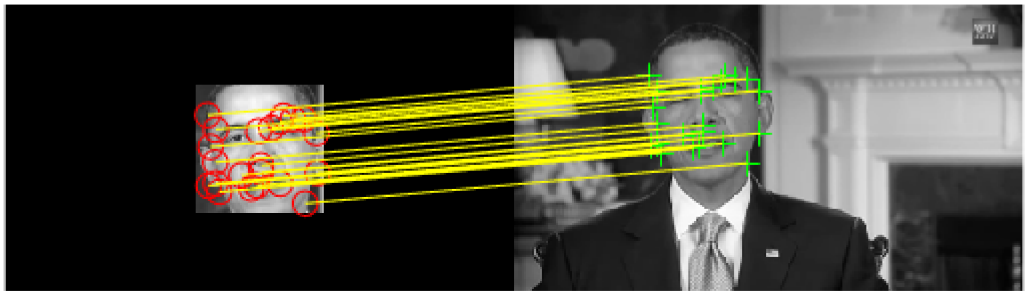
```
% Viola-Jones
close all
Detector = vision.CascadeObjectDetector('FrontalFaceCART');
VR = VideoReader('Obama.webm');
VR.CurrentTime = 2; % comencem en el segon 2
while hasFrame(VR)
    I = imresize(readFrame(VR),0.5);
    bboxes = step(Detector,I);
    if size(bboxes,1) > 0
        for i=1:size(bboxes,1)
            cara = bboxes(i,:);
            F = imcrop(I,cara);
        end
        I = insertShape(I,'Rectangle',bboxes);
    end
    imshow(I);
end
```

```
close all
Detector = vision.CascadeObjectDetector('FrontalFaceCART');
VR = VideoReader('Obama.webm');
VR.CurrentTime = 3;
I = imresize(rgb2gray(readFrame(VR)),0.5);
bboxes = step(Detector,I);
im_obj = imcrop(I,bboxes);
imshow(im_obj);
```

```
% while hasFrame(VR)
%     im_esc = imresize(rgb2gray(readFrame(VR)),0.5);
%
%     kp_obj = detectSIFTFeatures(im_obj);
%     kp_obj = selectStrongest(kp_obj,50);
%
%     kp_esc = detectSIFTFeatures(im_esc);
```

```
%     kp_esc = selectStrongest(kp_esc,200);
%
%
%     [feat_obj,kp_obj] = extractFeatures(im_obj,kp_obj,'Method','SIFT');
%     [feat_esc,kp_esc] = extractFeatures(im_esc,kp_esc,'Method','SIFT');
%
%     pairs = matchFeatures(feat_obj,feat_esc,"MatchThreshold",10);
%
%     m_kp_obj = kp_obj(pairs(:,1),:);
%     m_kp_esc = kp_esc(pairs(:,2),:);
%
%     figure
%     showMatchedFeatures(im_obj,im_esc,m_kp_obj,m_kp_esc,"montage");
%
%     T = estimateGeometricTransform2D(m_kp_obj,m_kp_esc,"affine");
%
%     [f,c] = size(im_obj);
%     figure
%     imshow(im_obj);
%     box = [1,1;c,1;c,f;1,f;1,1];
%     hold on
%     line(box(:,1),box(:,2));
%     nbox = transformPointsForward(T,box);
%
%     figure
%     imshow(im_esc);
%     hold on
%     line(nbox(:,1),nbox(:,2));
% end
imshow('cabeza.png');
```

```
imshow('linias.png');
```



```
imshow('obama_total.png');
```