E11

Característiques locals II

```
BW = rgb2gray(imread('Abecedari.png')) < 200;

imshow(BW);

BWU = BW;
BWU(end/2:end,:) = 0;
```

```
Warning: Integer operands are required for colon operator when used as index.
```

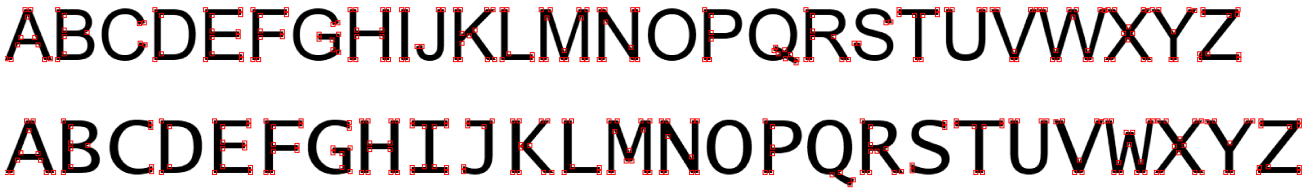
```
BWD = BW;
BWD(1:end/2,:) = 0;
```

```
Warning: Integer operands are required for colon operator when used as index.
```

```
CCU = bwconncomp(BWU);
CCD = bwconncomp(BWD);

propsU = regionprops('table',CCU,'Centroid');
propsD = regionprops('table',CCD,'Centroid');

FU = extractHOGFeatures(BWU,propsU.Centroid,"CellSize",[16 16], "BlockSize",[3 3]);
FD = extractHOGFeatures(BWD,propsD.Centroid,"CellSize",[16 16], "BlockSize",[3 3]);

NumObj = CCU.NumObjects; % nombre d'objectes trobats a la fila de dalt

A = zeros(NumObj,NumObj);
for i = 1: NumObj
    for j = 1: NumObj
        A(j,i) = norm(FU(i,:) - FD(j,:));
    end
end

costUnmatched = max(A,[],'all');
Assig = matchpairs(A,costUnmatched);

hold on
for i = 1:NumObj
    line( [propsU.Centroid(i,1) propsD.Centroid(Assig(i),1)],[propsU.Centroid(i,2), propsD.Cent
end
hold off
```

Harris Corner Detector

```
im = rgb2gray(imread("Abecedari.png"));
imshow(im)
wsize = 5;
kp = Harris(double(im),wsize);

for i = 1:size(kp,1)
    rectangle('Position',[kp.Centroid(i,1)-wsize/2,kp.Centroid(i,2)-wsize/2,wsize,wsize],'EdgeC
end
```




```
function [kp] = Harris(im,wsize)
    s = fspecial("sobel");
    Ix = imfilter (im,s,'replicate');
    Iy = imfilter (im,s','replicate');
    Ix2 = Ix.*Ix;
    Iy2 = Iy.*Iy;
    Ixy = Ix.*Iy;

    s = fspecial("gaussian",wsize,wsize/4);

    SumIx2 = imfilter (Ix2,s,'replicate');
    SumIy2 = imfilter (Iy2,s,'replicate');
    SumIxy = imfilter (Ixy,s,'replicate');

    R = SumIx2 .* SumIy2 - SumIxy.^2 - 0.05 * ((SumIx2 + SumIy2).^2);
    T = mean(R,"all") + 0.4 * std(R,[],'all');
    RD = imdilate(R,ones(3,3));
    RM = RD == R & R > T;
    kp = regionprops('table',RM,'Centroid');
end
```