

Binárny obraz



binarizácia

$BW = \text{im2bw}(I, \text{level})$

$\text{level} = \text{graythresh}(I)$

spendliky.png



Označenie komponentov

`[L,num] = bwlabel(BW,n)`

`RGB = label2rgb(L, map)`

Príznaky v MATLABe

```
s = regionprops(L,'centroid');  
centroids = cat(1, s.Centroid);  
imshow(BW)  
hold on  
plot(centroids(:,1), centroids(:,2), 'r*')  
hold off
```

'Area'	'EulerNumber'	'Orientation'
'BoundingBox'	'Extent'	'Perimeter'
'Centroid'	'Extrema'	'PixelIdxList'
'ConvexArea'	'FilledArea'	'PixelList'
'ConvexHull'	'FilledImage'	'Solidity'
'ConvexImage'	'Image'	'SubarrayIdx'
'Eccentricity'	'MajorAxisLength'	
'EquivDiameter'	'MinorAxisLength'	

Odstránenie malých objektov

```
stats = regionprops(L,'Area');  
[stats.Area]
```

```
idx = find([stats.Area] > 10);
```

- ```
BW = ismember(L,idx);
```



# Porovnanie príznakov

'Area', 'ConvexArea', 'Solidity', 'Eccentricity',  
'MajorAxisLength', 'EquivDiameter',  
'MinorAxisLength'



jeden.jpg

## Jednotlivé objekty

```
s = regionprops(L,'Image');
```

```
for ii=1:num
```

```
 obr=s(ii).Image;
```

```
 figure
```

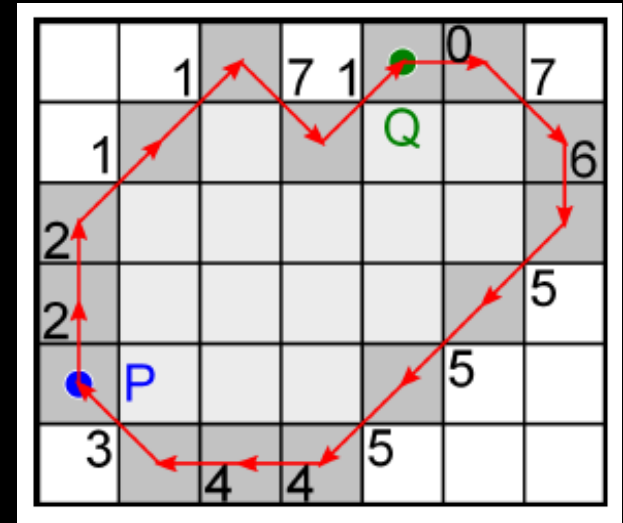
```
 imshow(obr)
```

```
 %% ine priznaky – Freeman
```

```
 B = bwboundaries(obr,'noholes');
```

```
 r=Freeman_code(B{1})
```

```
end
```



Freeman\_code.m

# Obvod - Perimeter

$$P = N_p + N_n$$

počet párnych resp. nepárnych číslíc v kóde

$$P = 0,948 * N_p + 1,340 * N_n$$

Váhovanie

$$P = 0,980 * N_p + 1,406 * N_n - 0,091 * N_r$$

Počet rohov  $N_r$  (miest, kde sa mení kód)

$N_{\text{pixels}}$

$$N_{\text{even}} + \sqrt{2} N_{\text{odd}}$$

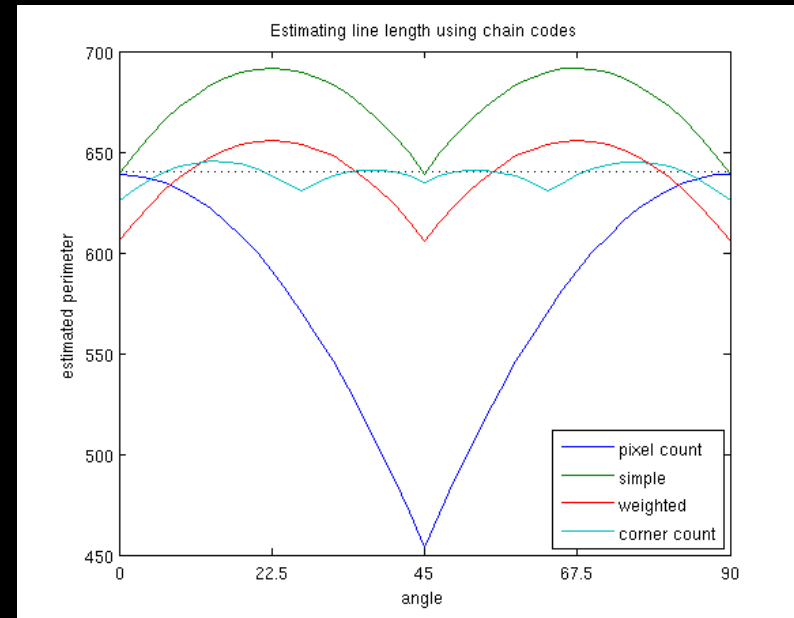
$$0.948 N_{\text{even}} + 1.340 N_{\text{odd}}$$

$$0.980 N_{\text{even}} + 1.406 N_{\text{odd}} - 0.091 N_{\text{corner}}$$

# Obvod - Perimeter

Spočítajte pre rotáciu po 5°,

```
J = imrotate(I,stupen,'bilinear','crop');
```



Porovnajte rozne metody pocitania obvodu