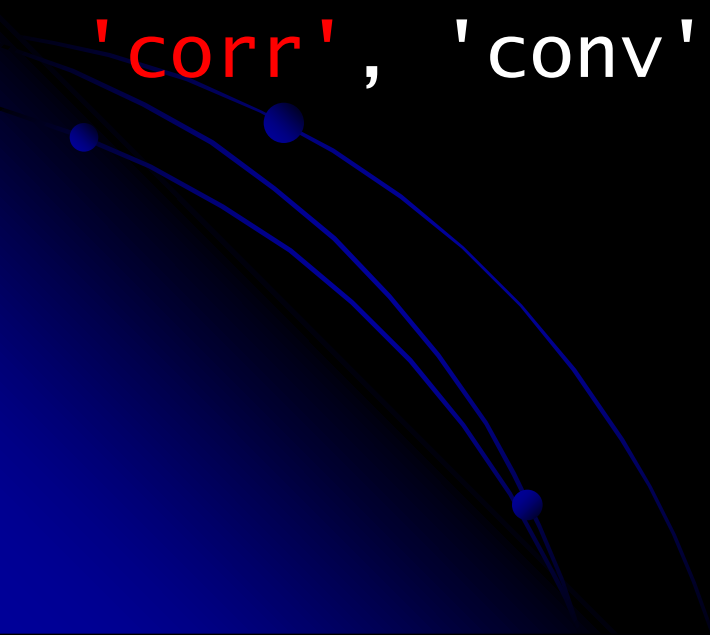


# imfilter

```
B = imfilter(A, h, option1, option2,...)
```

```
x=0, 'symmetric', 'replicate', 'circular'  
'same', 'full',  
'corr', 'conv'
```



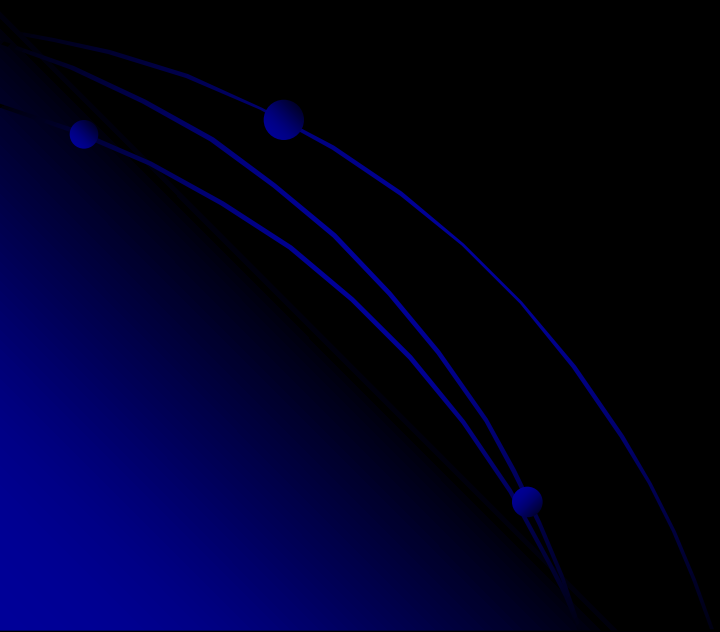
```
fspecial(typ, parametre)
```

```
h = fspecial('average', hsize)
```

```
h = fspecial('gaussian', hsize, sigma)
```

```
h = fspecial('sobel')
```

```
...
```



# Houghova transformácia

```
I=imread('ciary2.jpg');  
IG =rgb2gray(I);  
BW=edge(IG, 'Canny');  
  
[H,T,R] = hough(BW);  
imshow(H,[], 'XData',T, 'YData',R,...  
    'InitialMagnification','fit');  
xlabel('\theta'), ylabel('\rho');  
axis on, axis normal, hold on;  
colormap(hot);
```

$[H, T, R] = \text{hough}(BW)$  ;

- $H$  – matica Houghovej transformácie
- $T$  je pole hodnôt  $\theta$  a  $R$  je pole  $r$  nad ktorými je vyjadrená  $H$
- Riadky a stĺpce  $H$  zodpovedajú  $r$  a  $\theta$
- hodnota na pozícii (1,2) zodpovedá počtu bodov ležiacich na priamke z 1.  $r$  a 2.  $\theta$  z polí  $R$  a  $T$

```
P = houghpeaks(H,15);  
x = T(P(:,2)); y = R(P(:,1));  
plot(x,y,'s','color','white');
```

- peaks je pole  $Q \times 2$  kde  $Q$   
<0,numpeaks>  
a obsahuje indexy do polí T a R pro  
maximá v H

```
lines = houghlines(BW,T,R,P);  
figure, imshow(BW), hold on
```

lines je štruktúrované pole ktoré pre každú nájdenú úsečku obsahuje:

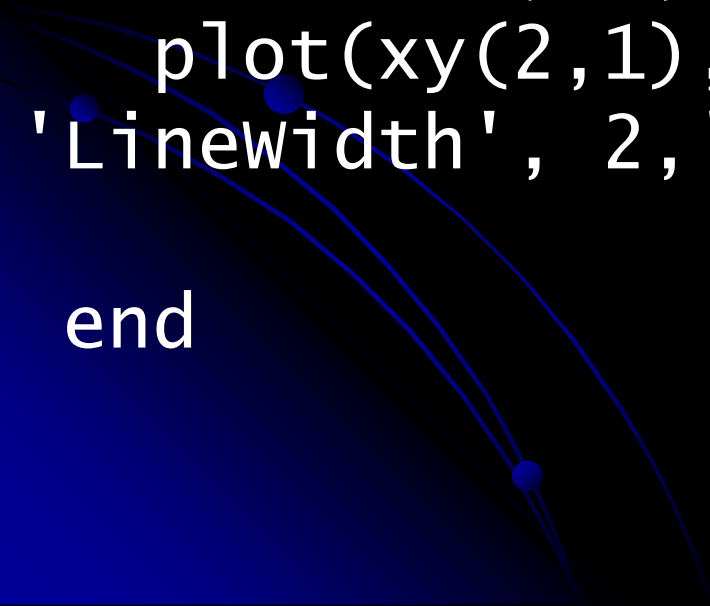
- point1 x,y hodnoty konca úsečky
- point2 x,y hodnoty konca úsečky
- theta uhol v stupňoch (z matice H)
- rho hodnota(z matice H)

```
for k = 1:length(lines)

    xy = [lines(k).point1;lines(k).point2];
    plot(xy(:,1),xy(:,2),'Linewidth',2,...
        'Color','green');

    plot(xy(1,1),xy(1,2),'x',...
        'Linewidth', 2, 'Color','yellow');
    plot(xy(2,1),xy(2,2),'x',...
        'Linewidth', 2, 'Color','red');

end
```



Harris

