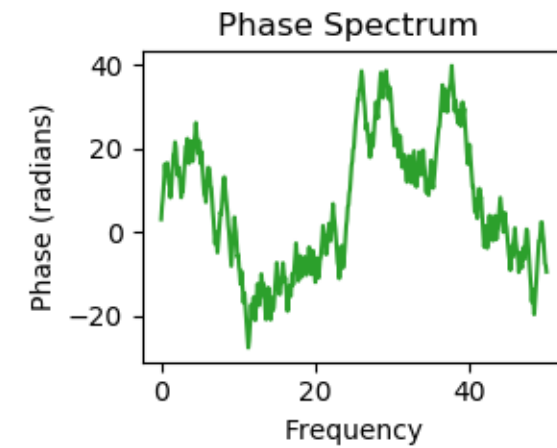
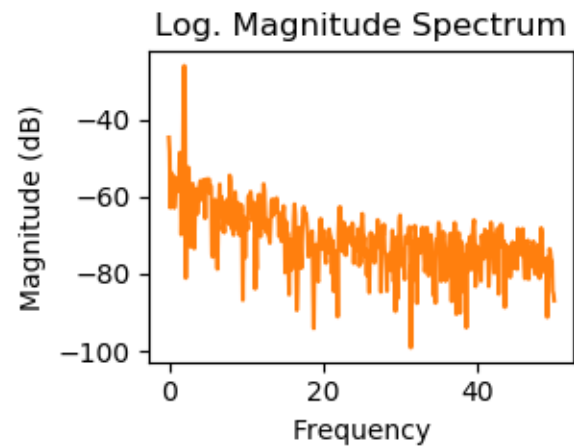
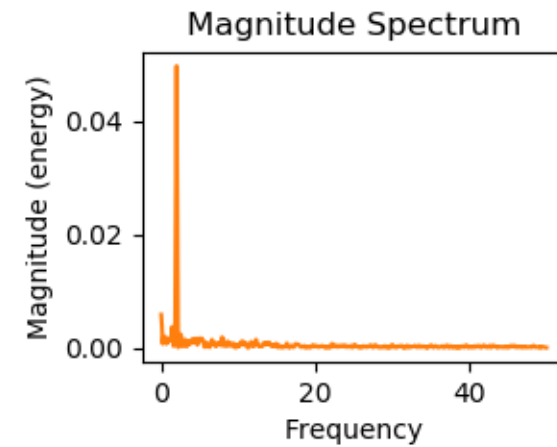
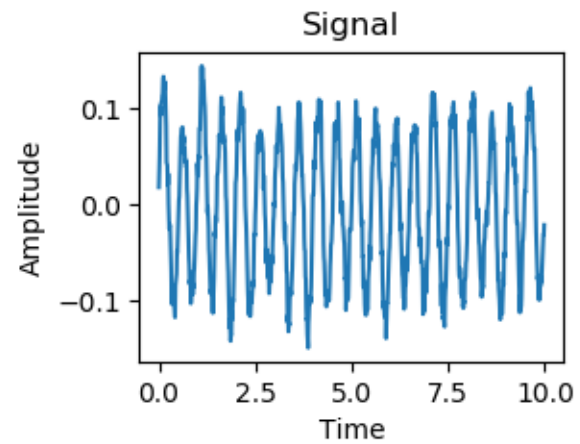


Vyhľadávanie vzoru na obrazu pomocou rýchlej Fourierovej transformácie

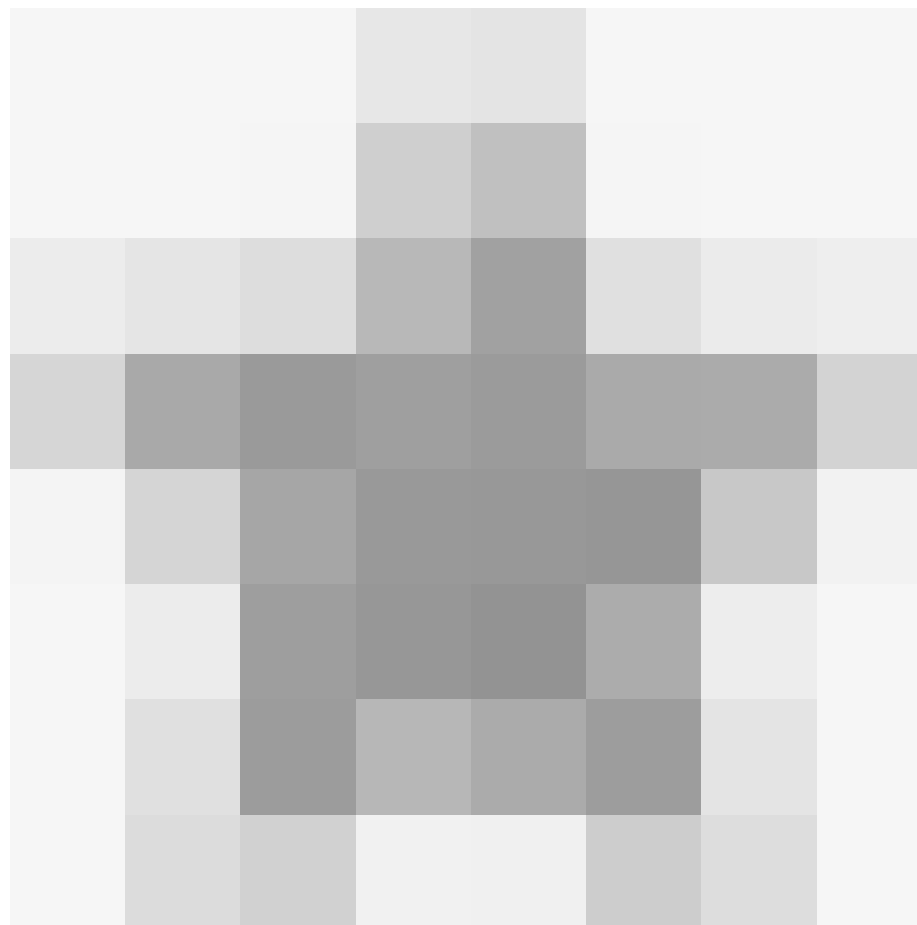
Daniel Kyselica

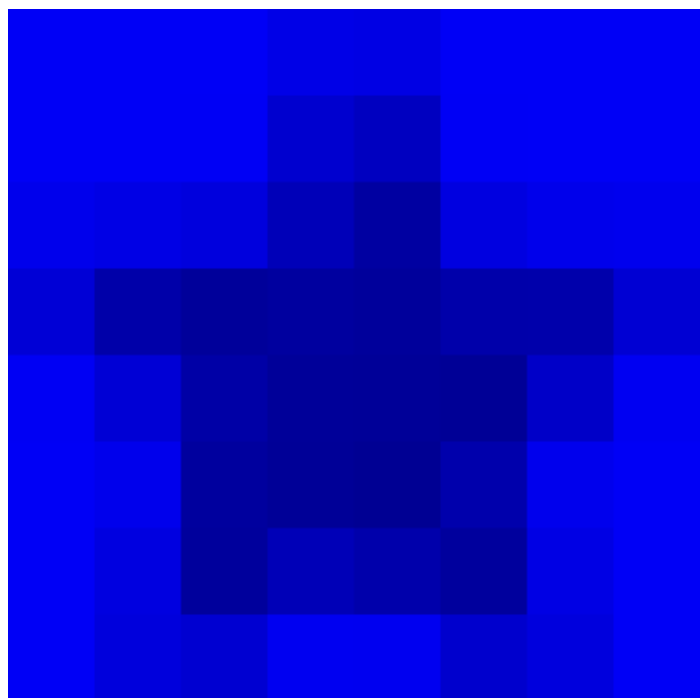
Školiteľ: RNDr. Andrej Lúčny, PhD.

Spektrá

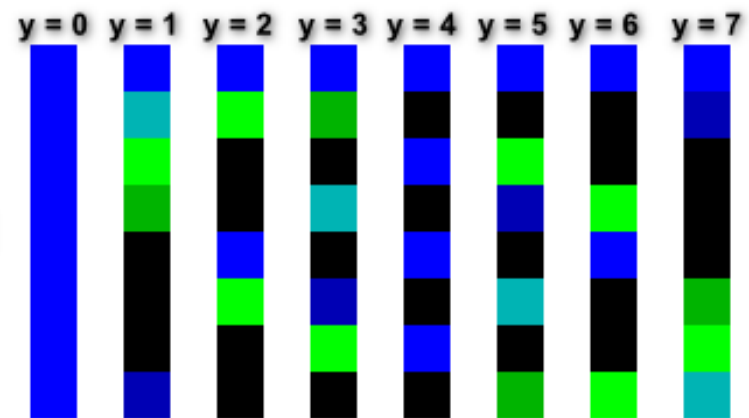


2D
inverzná
Fourierova
transformácia

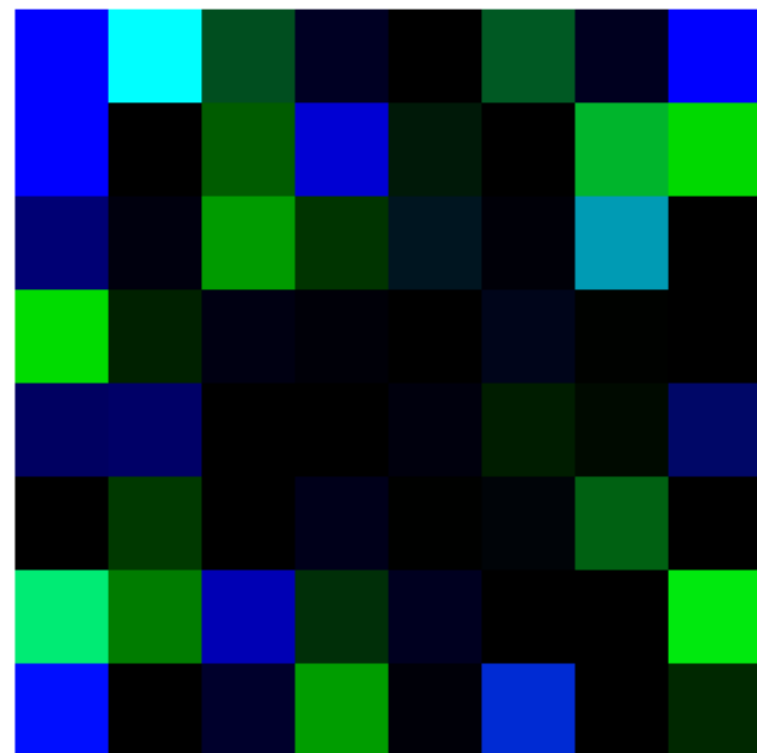
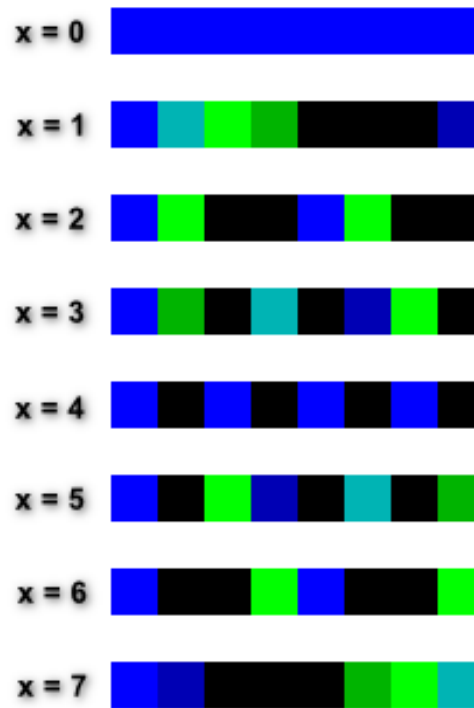




ωN



ωM



F

Vyhľadávanie vzoru na šedotónovom obraze



Algoritmus hľadajúci najbližší súčet

```
def find(a, b):  
    '''find b in a'''  
    A = a  
    B = np.zeros(A.shape)  
    B[0:b.shape[0],0:b.shape[1]] = b  
  
    FA = np.fft.fft2(A)  
    FB = np.fft.fft2(B)  
    D = np.fft.ifft2( np.multiply(A, np.conj(B)) )  
  
    # najdenie najblizsieho cisla k b**2  
    expected_sum = np.sum(b**2)  
    error = np.abs(D - expected_sum)  
  
    return np.unravel_index(np.argmin(error), D.shape)
```

Porovnanie algoritmov



Fázová korelácia



$$c a_{i,j} \xrightarrow{FFT} F_2[i,j] = cA, \varphi$$

$$\frac{Fa}{|Fa|} \cdot \frac{cFb}{|cFb|} = \frac{FacFb}{|Fa||cFb|}$$

$$a_{i,j} \xrightarrow{FFT} F_1[i,j] = A, \varphi$$

Porovnanie algoritmov



Ďakujem
za pozornosť