

Advanced Image Processing

Assignment 4

Analyzing the boundary of an object using Fourier descriptors

Due date: December 20th, 2018

The goal of this assignment is identifying and separating objects with smooth boundaries from objects having coarse and spiky boundaries. You may follow the steps below:

1. Segment the object
2. Find boundary points
3. Find Fourier descriptors of the boundary points
4. Eliminating high frequency coefficients of the Fourier descriptors apply the inverse Fourier transform and find the boundary in spatial domain.
5. Compare the areas (the original area and the area after applying inverse Fourier transform)
6. If the difference is large then the object has spiky boundary otherwise it is smooth in boundary

Elaborate on your results. What is a proper threshold for eliminating the high frequency coefficients? Can you suggest any applications?

You may use the following sample shapes.

