Image Segmentation- Week 3 - Deep Learning

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Mean Shift Segmentation – continued

Mean shift does not require you to predefine the number of clusters.

It is a tool for finding modes in a set of data samples, manifesting an underlying probability density function PDF in RN.

Mean Shift Algorithm

Convert the image into d-dimensional feature space.

Mean Shift Applications

Pattern recognition

* Clustering

Image processing

* Filtering
* Segmentation / Contour detection

Mathematical Morphology

* Techniques for pre - / post-processing
* Noise filtering
* Filling in small holes in foreground
* Extracting connected components
* Eliminating small protrusions from their boundaries, etc

Basic morphological operators take as input:

Morphological transformations are some simple operations based on the image shape. It is normally performed on binary images. It needs two inputs, one is our original image, second one is called structuring element or kernel which decides the nature of operation. Two basic morphological operators are Erosion and Dilation. Then its variant forms like Opening, Closing, Gradient etc which use a combination of the basic operators to achieve a specific goal.

Erosion – This is used to erode away boundaries of foreground objects (In order for this to happen you can use a mask to erase everything but the foreground which will remain as white if the image is converted to black and white). The Erosion kernel then slides through the image (as in 2D convolution). A pixel in the original image (either 1 or 0) will be considered 1 only if all the pixels under the kernel is 1, otherwise it is eroded (made to zero).