Thresholding

Thresholding is used to segment an image by

- 1) setting all pixels whose intensity values are above a threshold to a foreground value
- 2) all the remaining pixels to a background value.

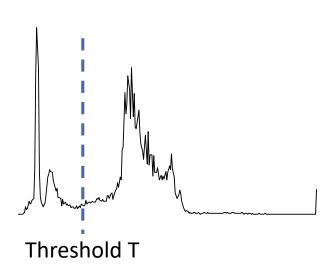
Conventional thresholding: one fixed threshold value for the whole picture.

Thresholding

It works well only if the histogram of the image contains neatly peaks corresponding to desired subjects and backgrounds.

Histogram

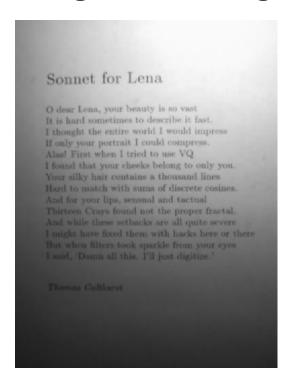


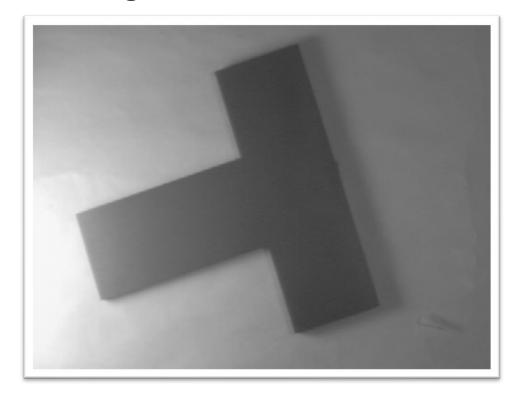


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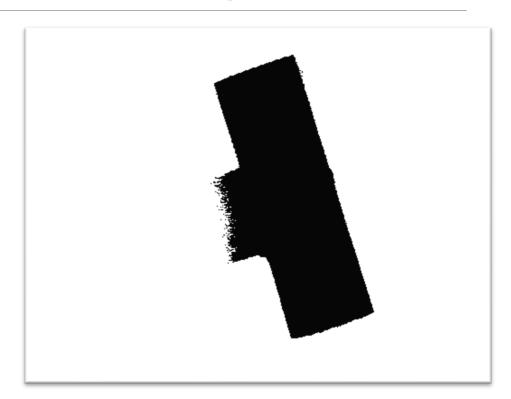
Thresholding

Conventional thresholding gives poor performance on images with strong illumination gradient.









Unsatisfatory results of conventional thresholding

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Thresholding is space variant.

The assumption is that small enough image regions are more likely to have approximately uniform illumination.

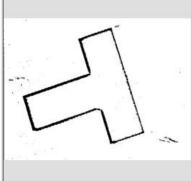
How can we choose the local threshold values?

- Mean
- Median
- •(Max+Min)/2



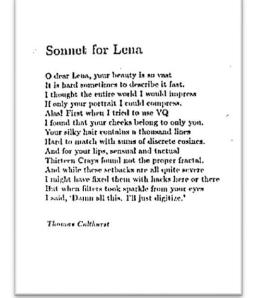






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Adaptive thresholding is used to separate desirable foreground image objects from the background based on the difference in pixel intensities of each small region.



Threshold=the mean of a 7x7 neighborhood-7

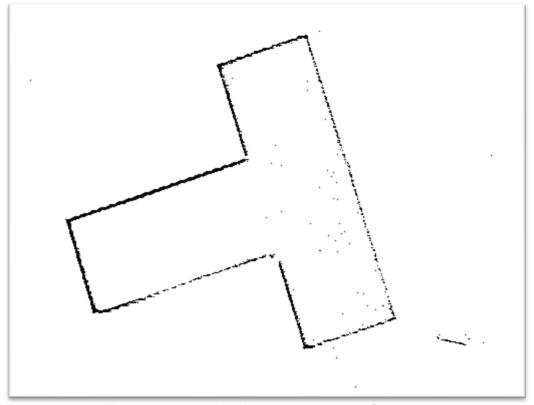
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Threshold=the median of a 7x7 neighborhood



Threshold=the mean of a 7x7 neighborhood-4