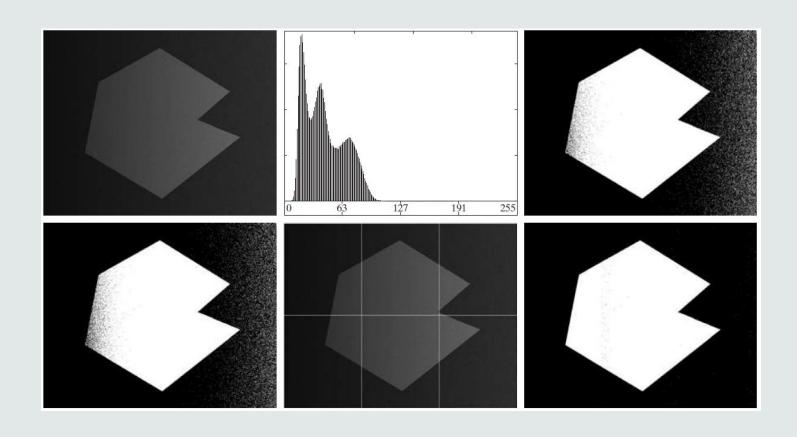
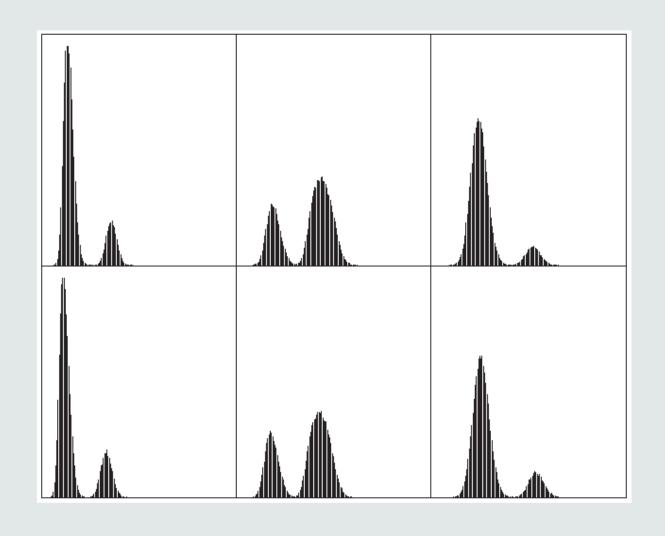


# IMAGE PARTITIONING



# IMAGE PARTITIONING



## LIMITATIONS OF IMAGE PARTITIONING

• Size of object and background must be comparable

## VARIABLE THRESHOLDING

• Local image properties

• Threshold at every point (x,y) looking at its neighbours

# VARIABLE THRESHOLDING (BASIC APPROACH)

- Use standard deviation & mean of the pixels in the neighbourhood
- $\sigma_{xy}$  and  $m_{xy}$  are standard deviation and mean value of the pixels in neighbourhood  $S_{xy}$

$$T_{xy} = a\sigma_{xy} + bm_{xy} \text{ or } T_{xy} = a\sigma_{xy} + bm_{G}$$

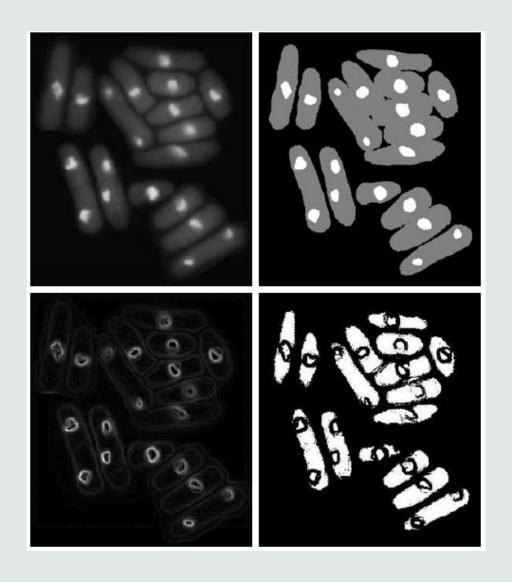
$$g(x, y) = \begin{cases} 1 & \text{if } f(x, y) > T_{xy} \\ 0 & \text{if } f(x, y) \le T_{xy} \end{cases}$$

#### VARIABLE THRESHOLDING

$$Q(\sigma_{xy}, m_{xy}) = \begin{cases} \text{true} & \text{if } f(x, y) > a\sigma_{xy} \text{ AND } f(x, y) > bm_{xy} \\ \text{false} & \text{otherwise} \end{cases}$$

$$g(x, y) = \begin{cases} 1 & \text{if } Q(\text{local parameters}) \text{ is true} \\ 0 & \text{if } Q(\text{local parameters}) \text{ is false} \end{cases}$$

# VARIABLE THRESHOLDING



## MOVING AVERAGE

$$m(k + 1) = \frac{1}{n} \sum_{i=k+2-n}^{k+1} z_i$$
$$= m(k) + \frac{1}{n} (z_{k+1} - z_{k-n})$$

## MOVING AVERAGE

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## MOVING AVERAGE

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### MULTIVARIABLE THRESHOLDING

$$g = \begin{cases} 1 & \text{if } D(\mathbf{z}, \mathbf{a}) < T \\ 0 & \text{otherwise} \end{cases}$$

$$D(\mathbf{z}, \mathbf{a}) = \|\mathbf{z} - \mathbf{a}\|$$
$$= \left[ (\mathbf{z} - \mathbf{a})^T (\mathbf{z} - \mathbf{a}) \right]^{\frac{1}{2}}$$

$$D(\mathbf{z}, \mathbf{a}) = \left[ (\mathbf{z} - \mathbf{a})^T \mathbf{C}^{-1} (\mathbf{z} - \mathbf{a}) \right]^{\frac{1}{2}}$$