

Segmentation Methods

Thresholding techniques

Global, adaptive, Otsu's method

Region growing

Seed-based similar pixel grouping

Watershed algorithm

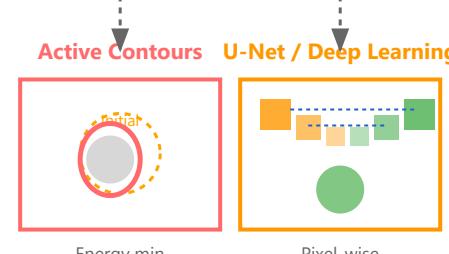
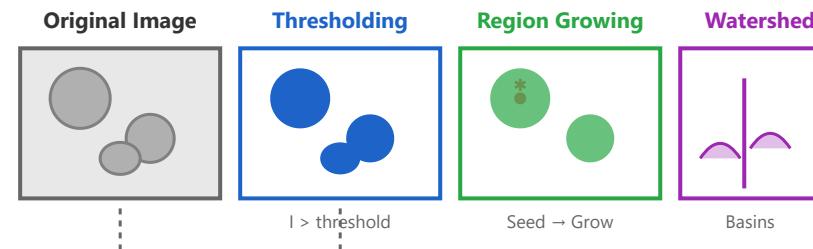
Treating image as topographic surface

Active contours

Energy-minimizing snakes

Machine learning methods

U-Net, Mask R-CNN for segmentation



Clinical Applications
Tumor delineation • Cell counting
Organ segmentation • Lesion detection

Method	Speed	Accuracy
Threshold	Fast	Medium
Region	Medium	Medium
Watershed	Medium	High
Snakes	Slow	High
Deep Learn	Slow	High

Key Considerations:

- Threshold: Simple, fast, manual tuning
- Region: Good for homogeneous areas
- Watershed: Handles touching objects
- DL: Best accuracy, needs training data