Yuli Wu

Contour Refinement of Leukocyte Segmentations in Scans of Stained Bone Marrow

Lehrstuhl für
Bildverarbeitung

RWTH AACHEN
UNIVERSITY

Active Contour Models - Chan-Vese

Methodology

25

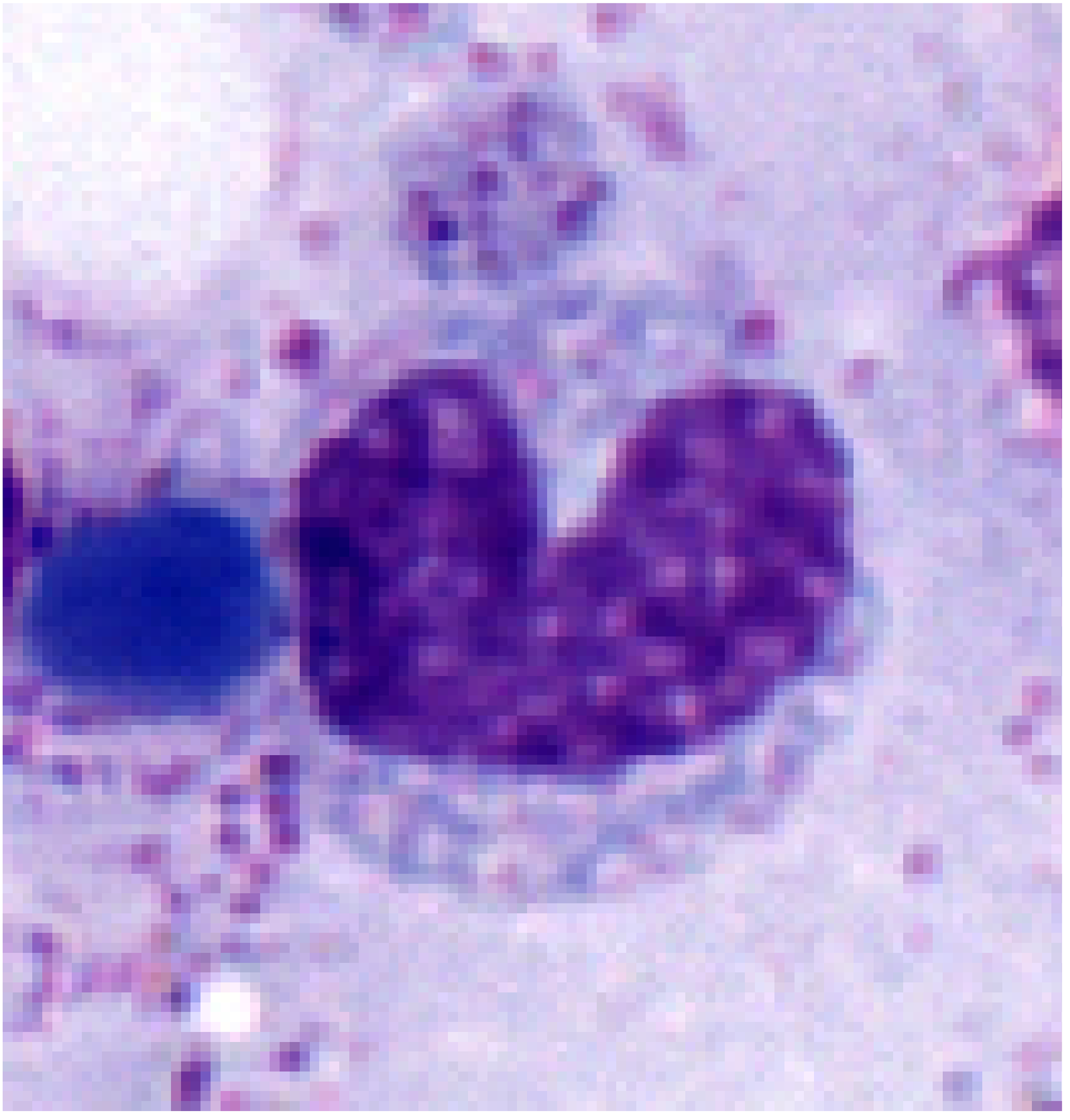
$$E_{ACWE}(\overline{I_1}, \overline{I_2}, \mathscr{C}) = \mu \cdot l(\mathscr{C}) + \lambda_1 \int_{inside(\mathscr{C})} |I(\boldsymbol{x_0}) - \overline{I_1}|^2 d\boldsymbol{x} + \lambda_2 \int_{outside(\mathscr{C})} |I(\boldsymbol{x_0}) - \overline{I_2}|^2 d\boldsymbol{x}$$

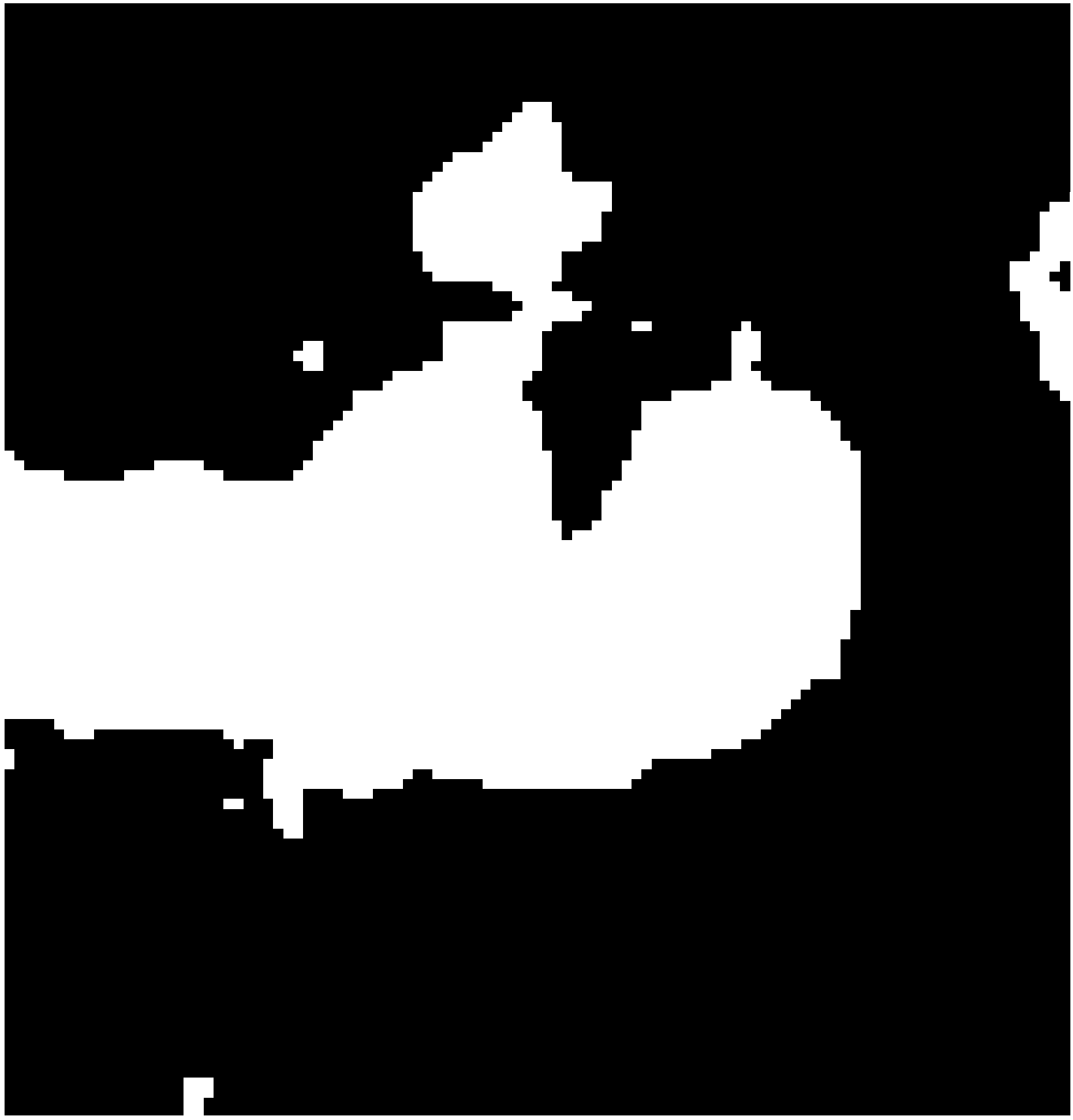
- Idea: minimise the *Energy Function*

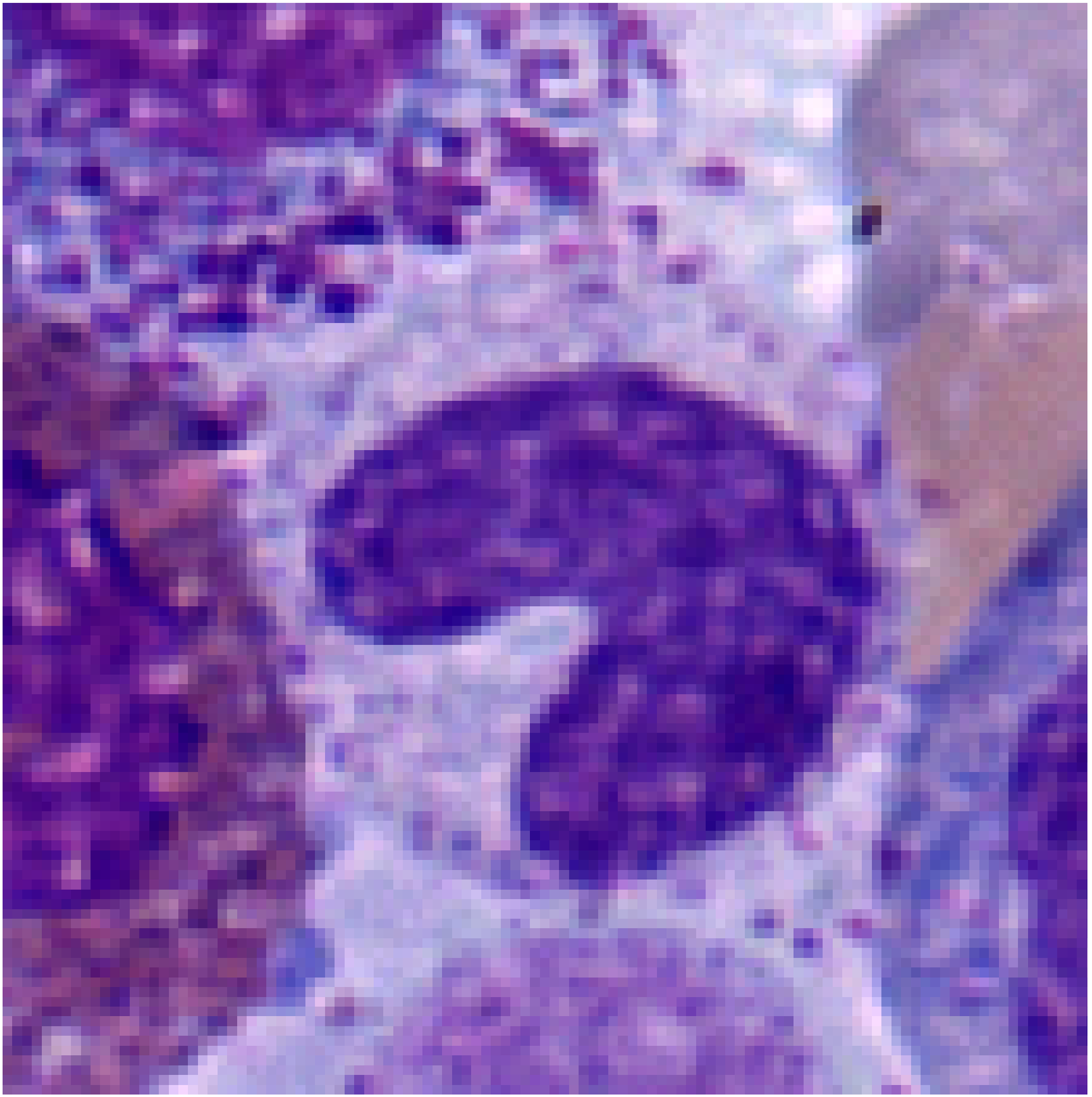
μ : edge length

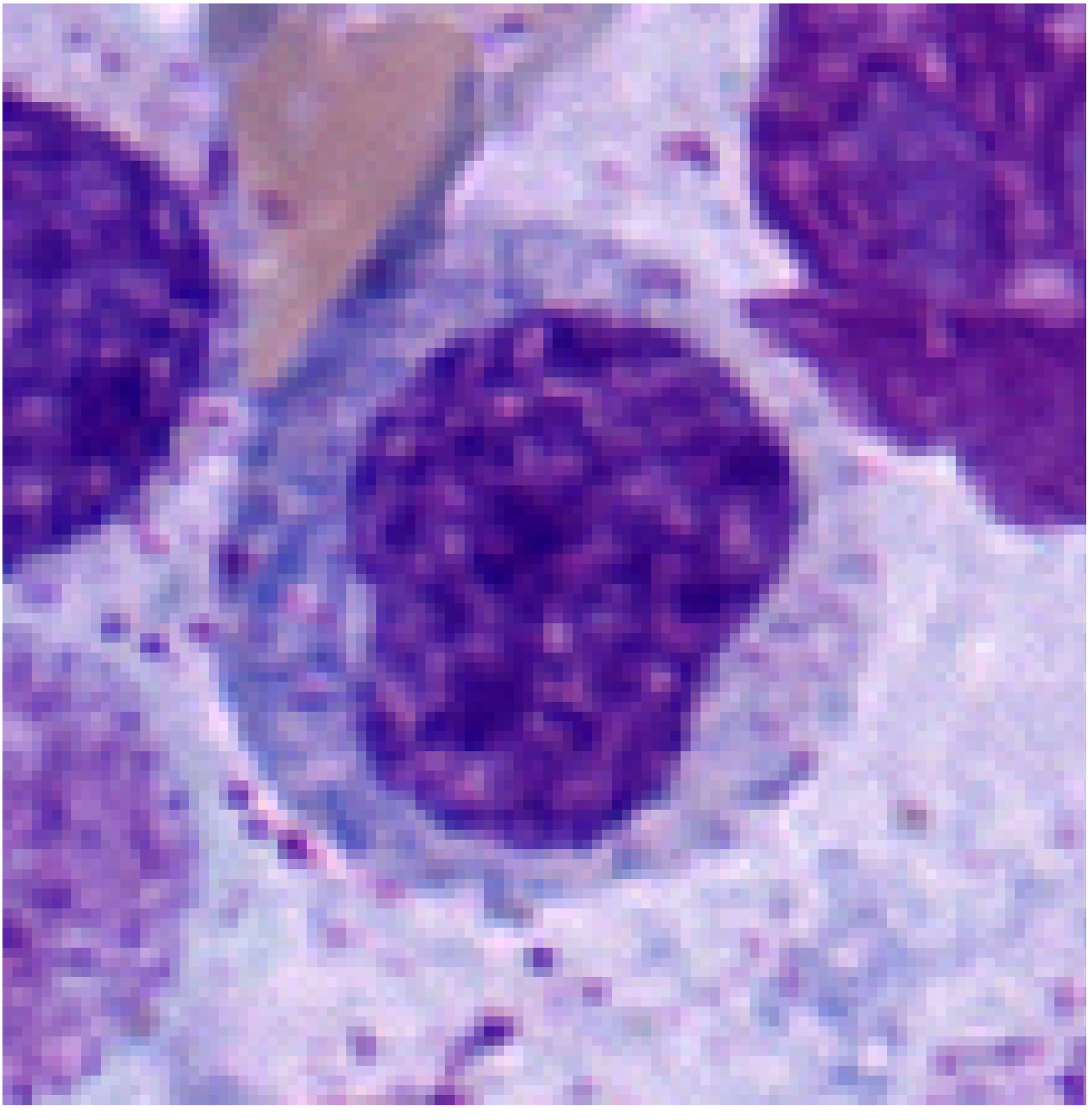
λ_1, λ_2 : difference from average, intensity range

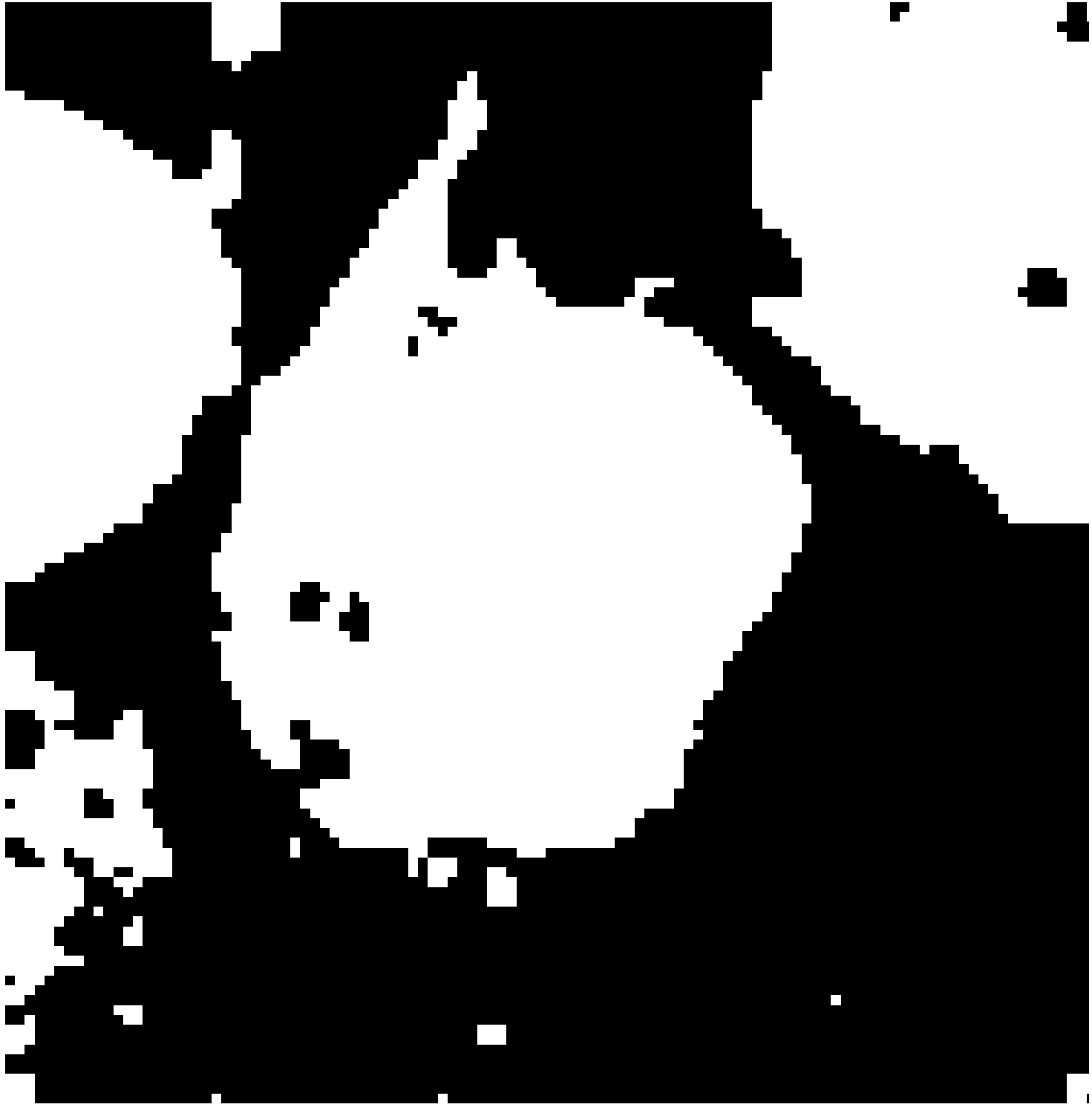
- Known as ***A**ctive **C**ontours **W**ithout **E**dges*









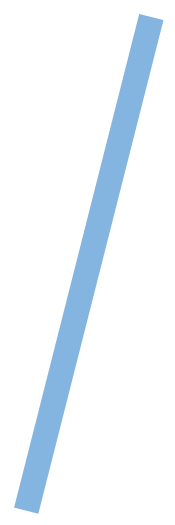


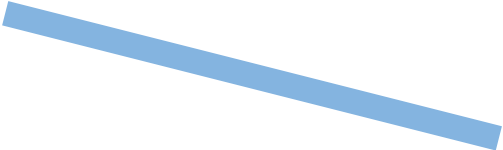
Methodology

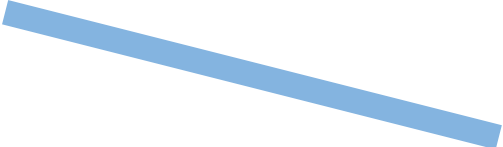
Normalisation

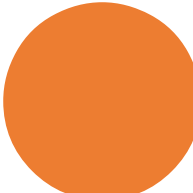
Preprocessing

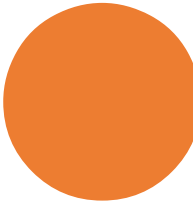
Segmentation











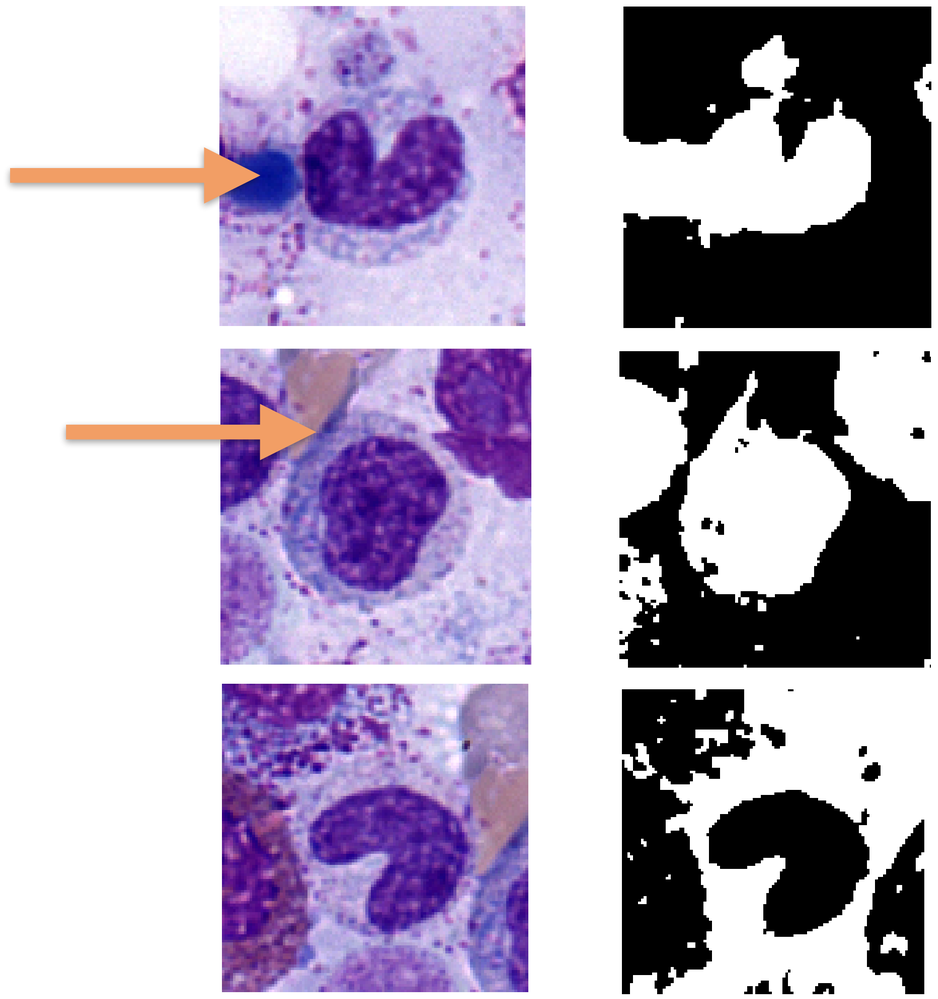
Active Contour Models - Chan-Vese

- Idea: minimise the *Energy Function*
- Known as ***A**ctive **C**ontours **W**ithout **E**dges*

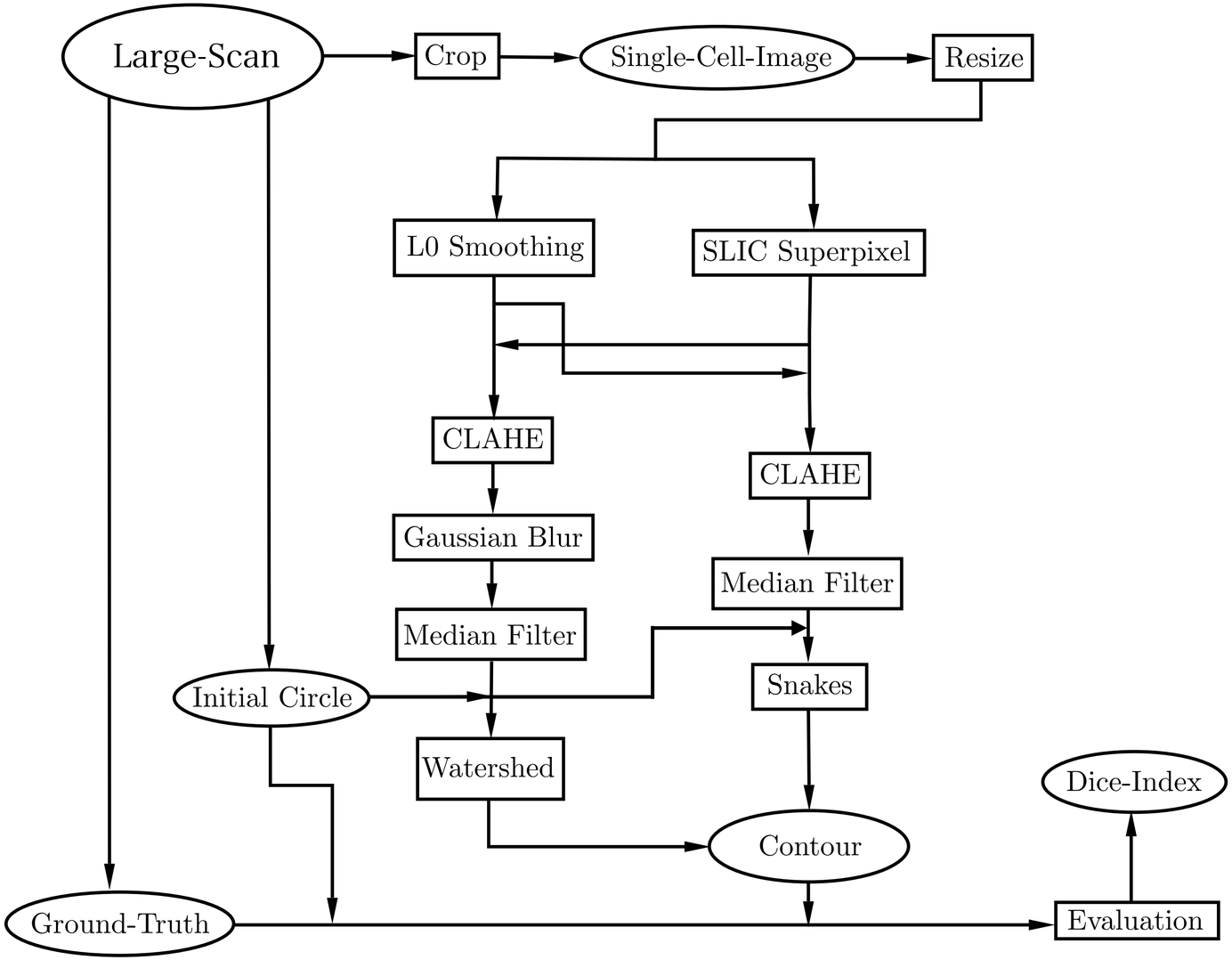
$$E_{ACWE}(\overline{I}_1, \overline{I}_2, \mathscr{C}) = \mu \cdot l(\mathscr{C}) + \lambda_1 \int_{inside(\mathscr{C})} |I(\boldsymbol{x_0}) - \overline{I}_1|^2 d\boldsymbol{x} + \lambda_2 \int_{outside(\mathscr{C})} |I(\boldsymbol{x_0}) - \overline{I}_2|^2 d\boldsymbol{x}$$

μ : edge length

λ_1, λ_2 : difference from average, intensity range



Outline


Large-Scan
Crop
Single-Cell-Image
Resize
L0 Smoothing
SLIC Superpixel
CLAHE
CLAHE
Gaussian Blur
Median Filter
Median Filter
Initial Circle
Snakes
Watershed
Dice-Index
Contour
Ground-Truth
Evaluation