



Yuli Wu

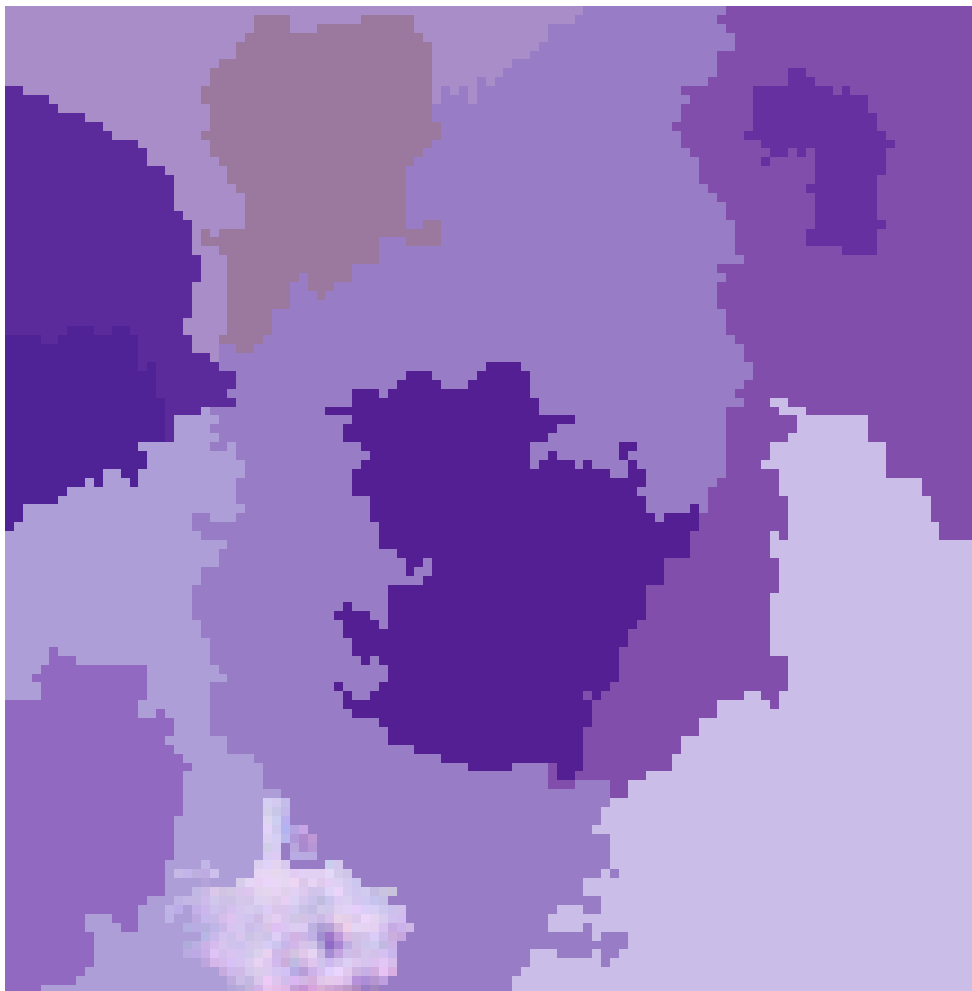
**Contour Refinement of Leukocyte Segmentations in Scans of Stained Bone Marrow**



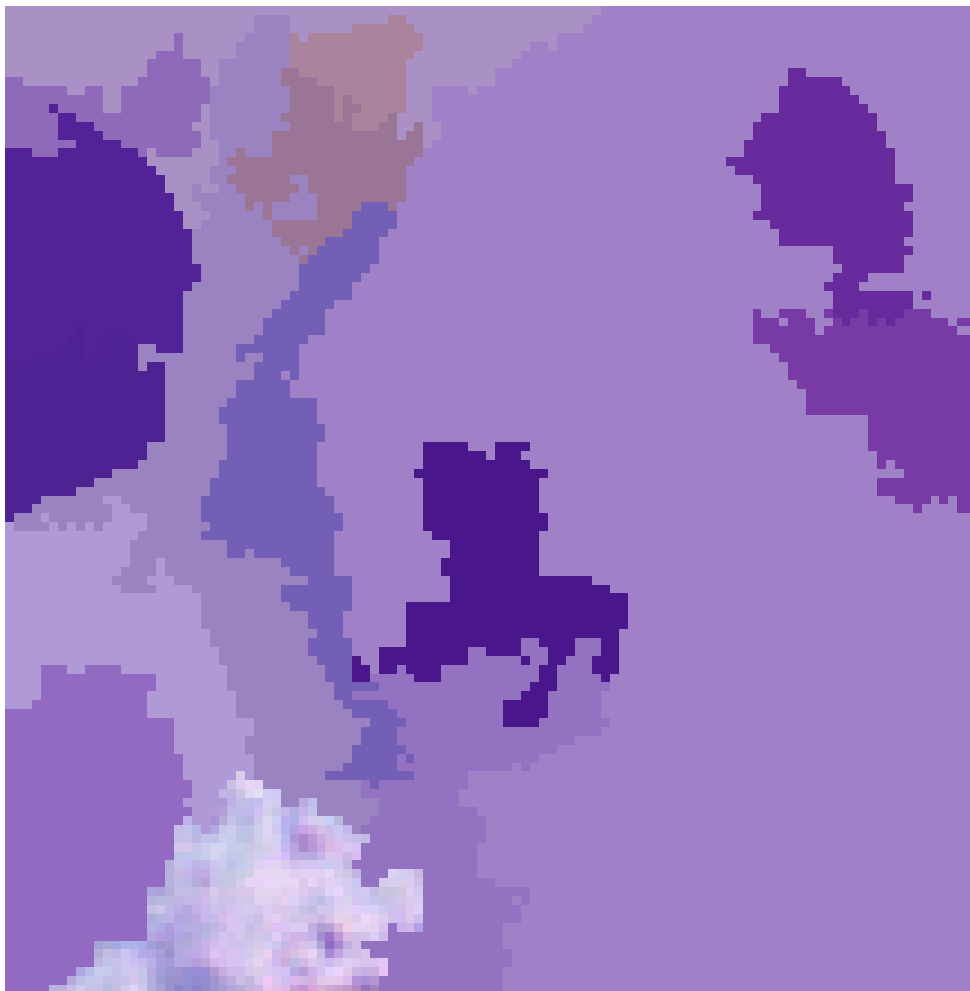
Lehrstuhl für  
Bildverarbeitung

**RWTH** AACHEN  
UNIVERSITY

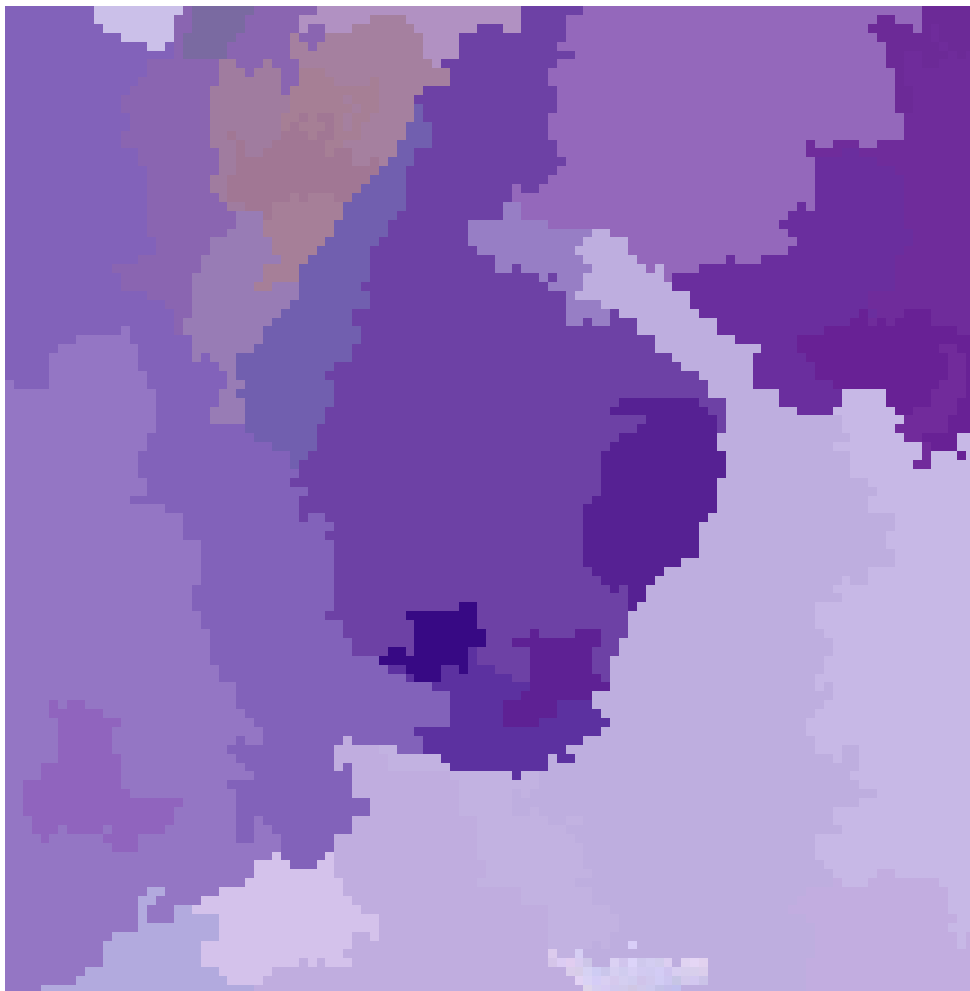
n\_seg:50, cmp:1



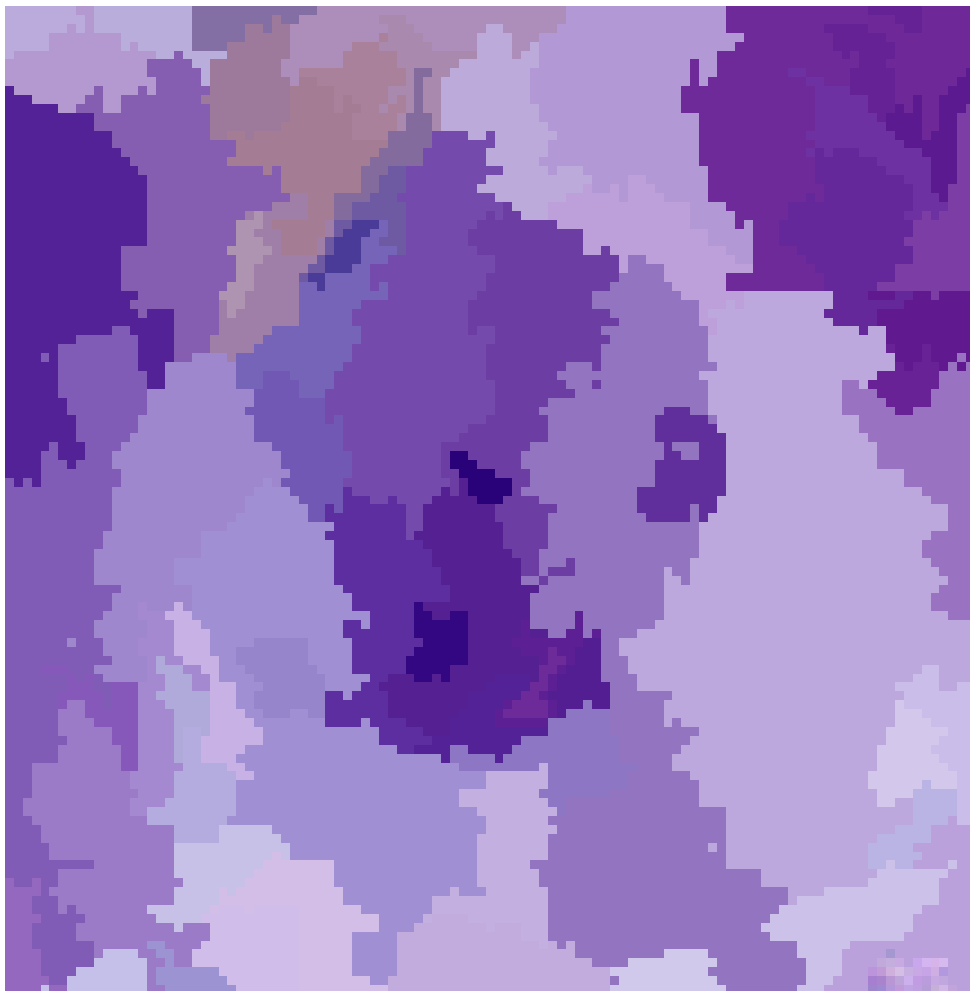
n\_seg:100, cmp:1



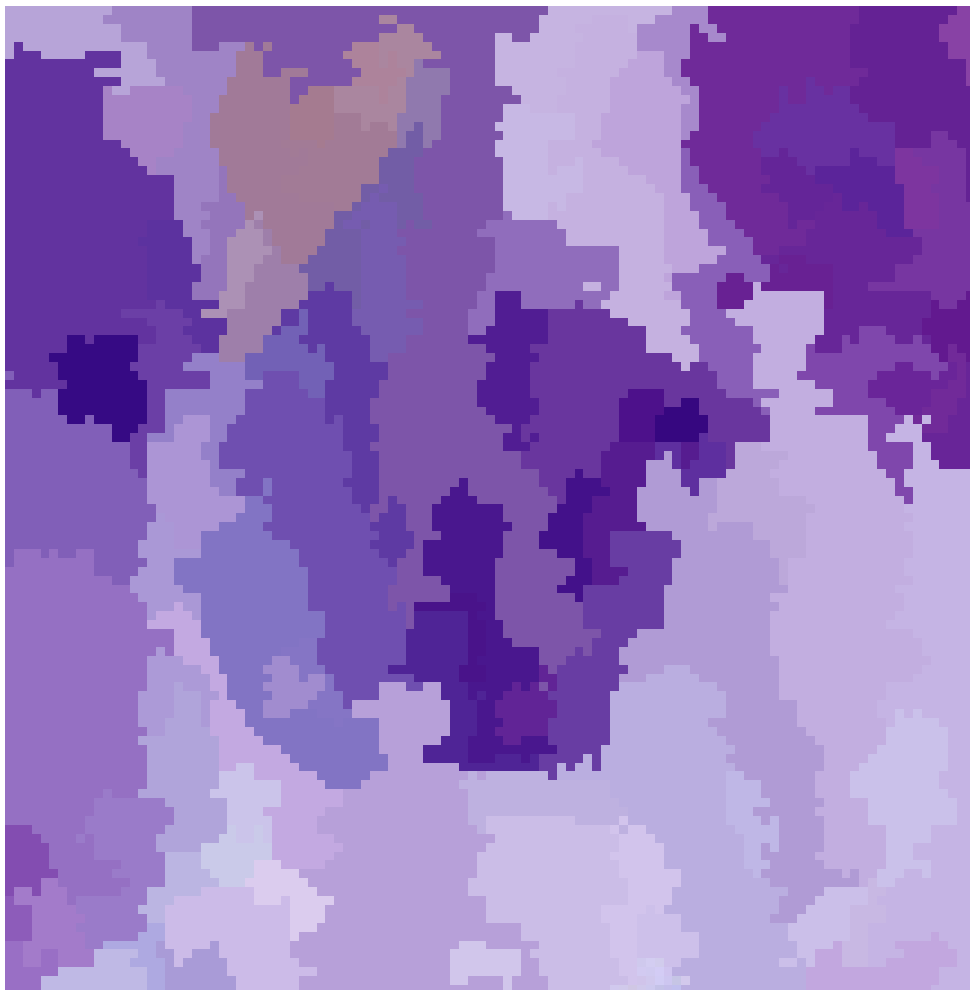
n\_seg:200, cmp:1



n\_seg:350, cmp:1

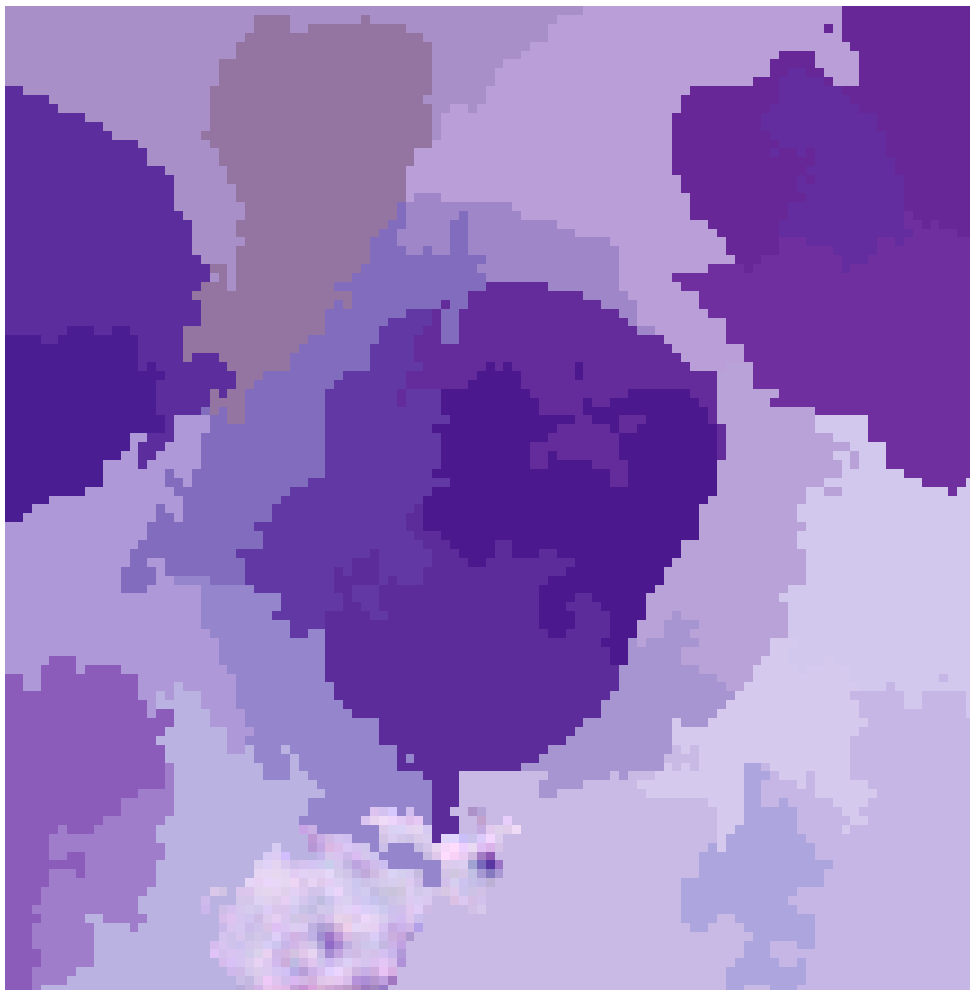


n\_seg:500, cmp:1

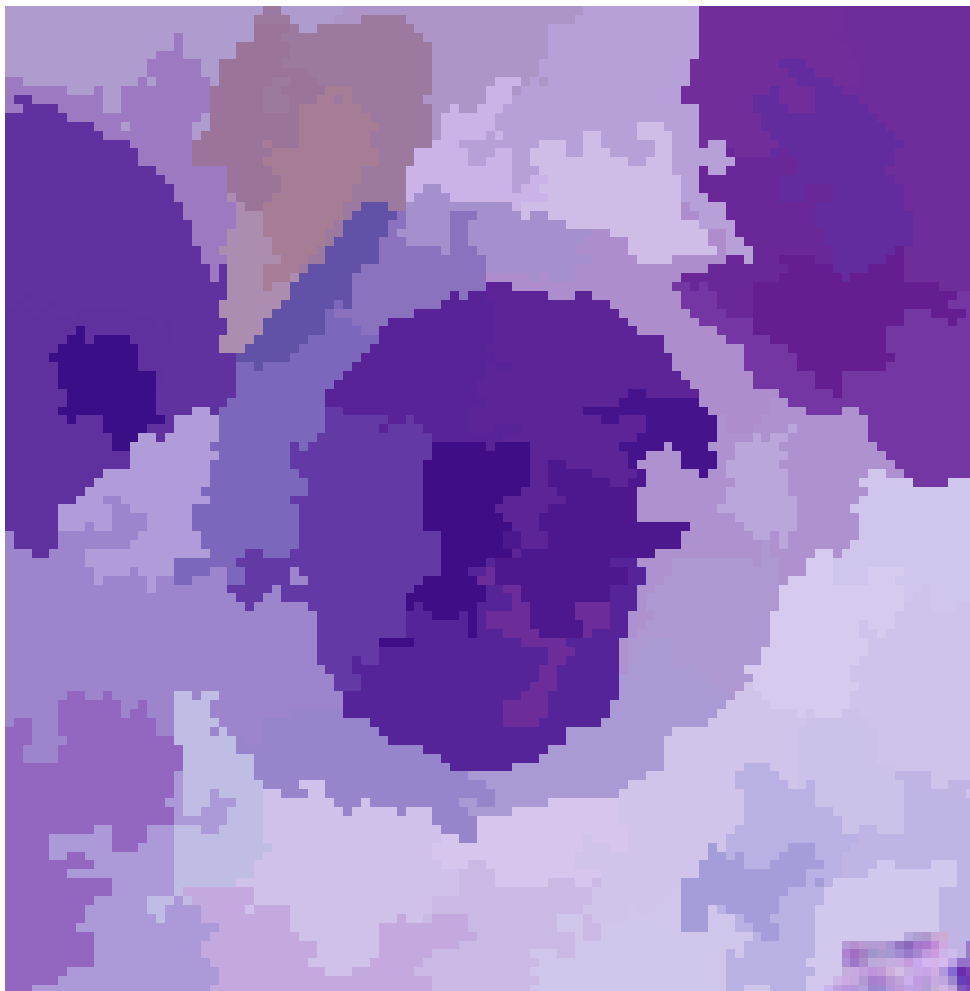




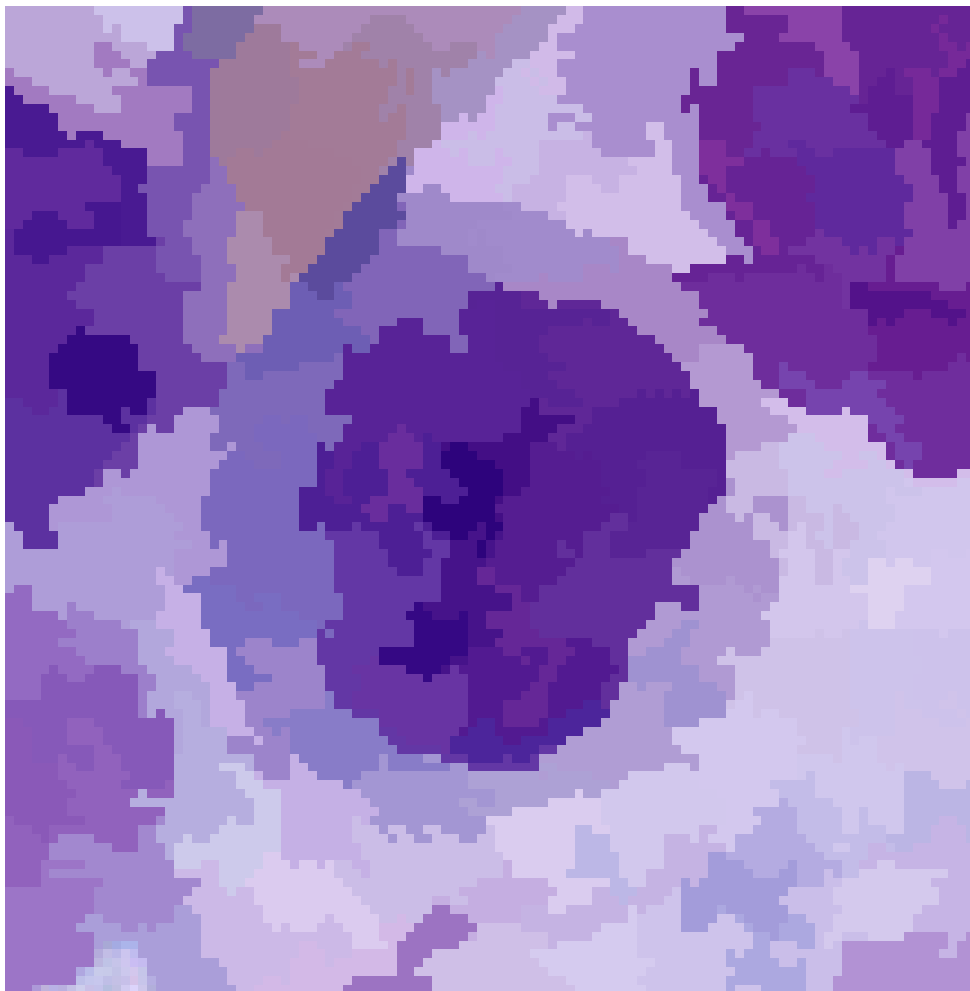
n\_seg:50, cmp:5



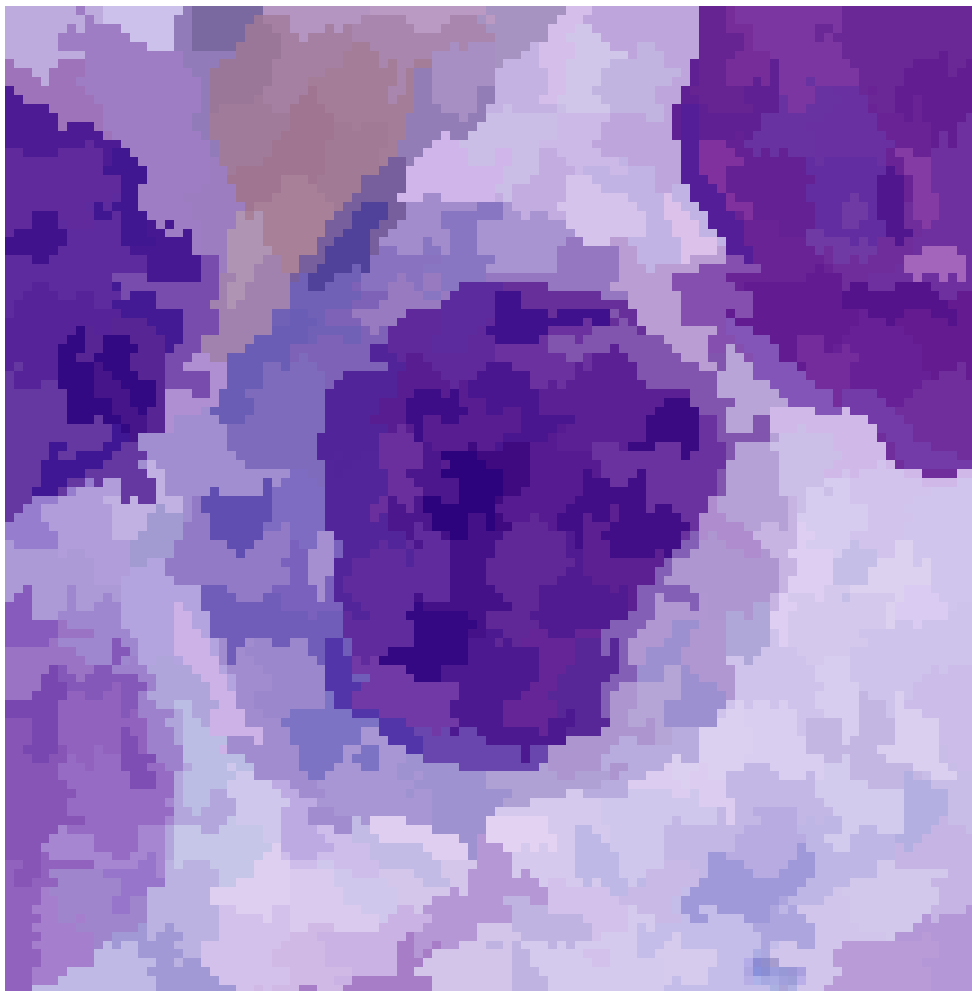
n\_seg:100, cmp:5



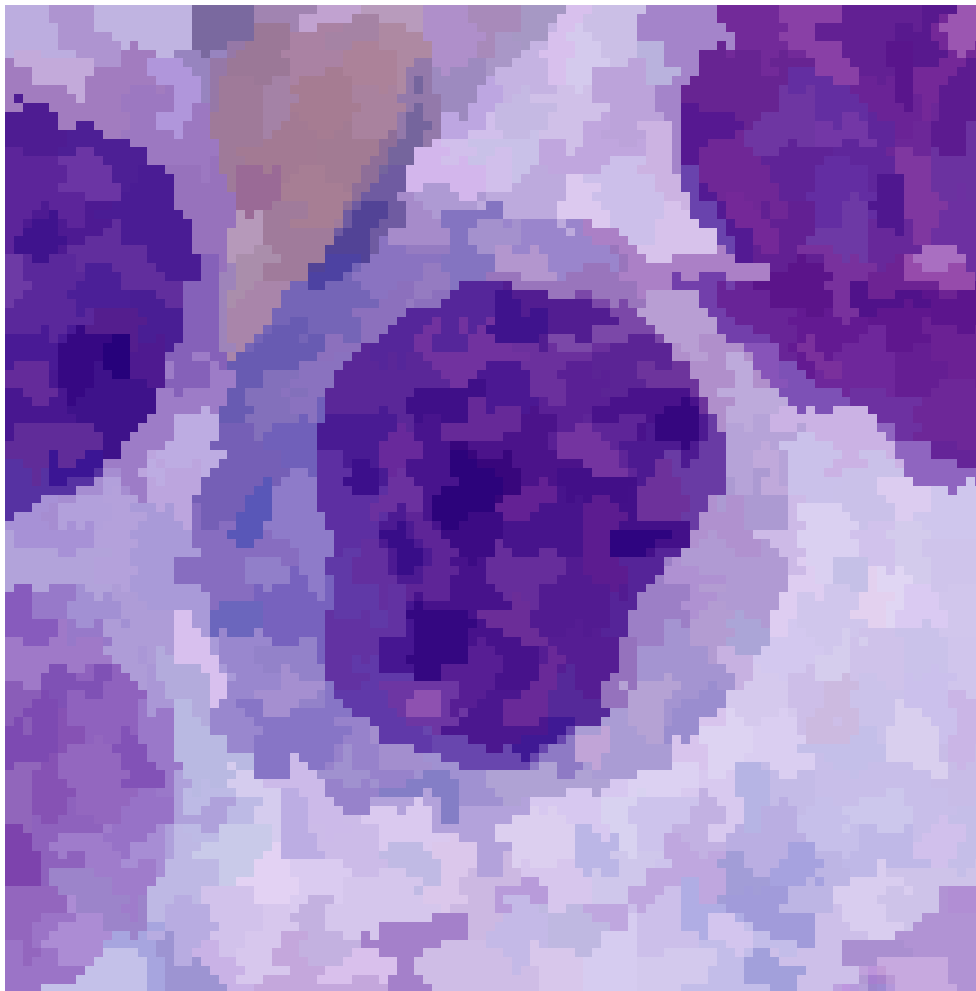
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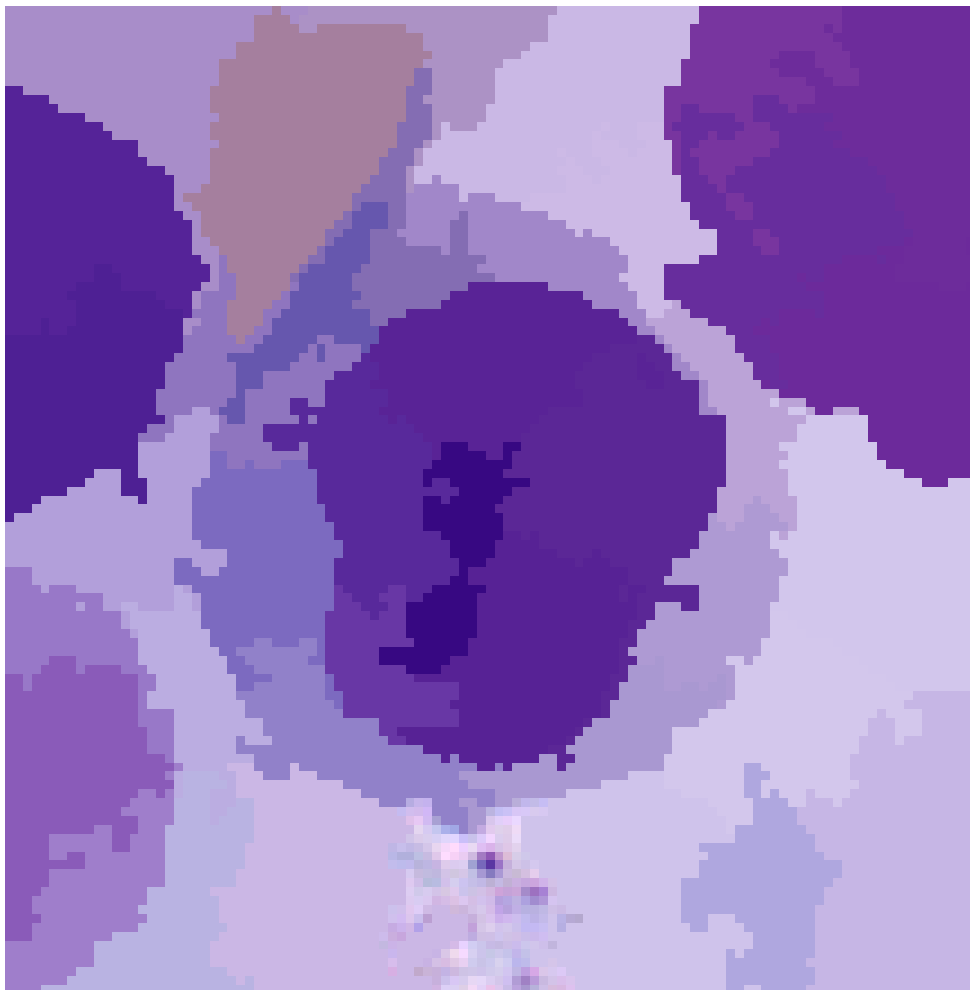
n\_seg:350, cmp:5



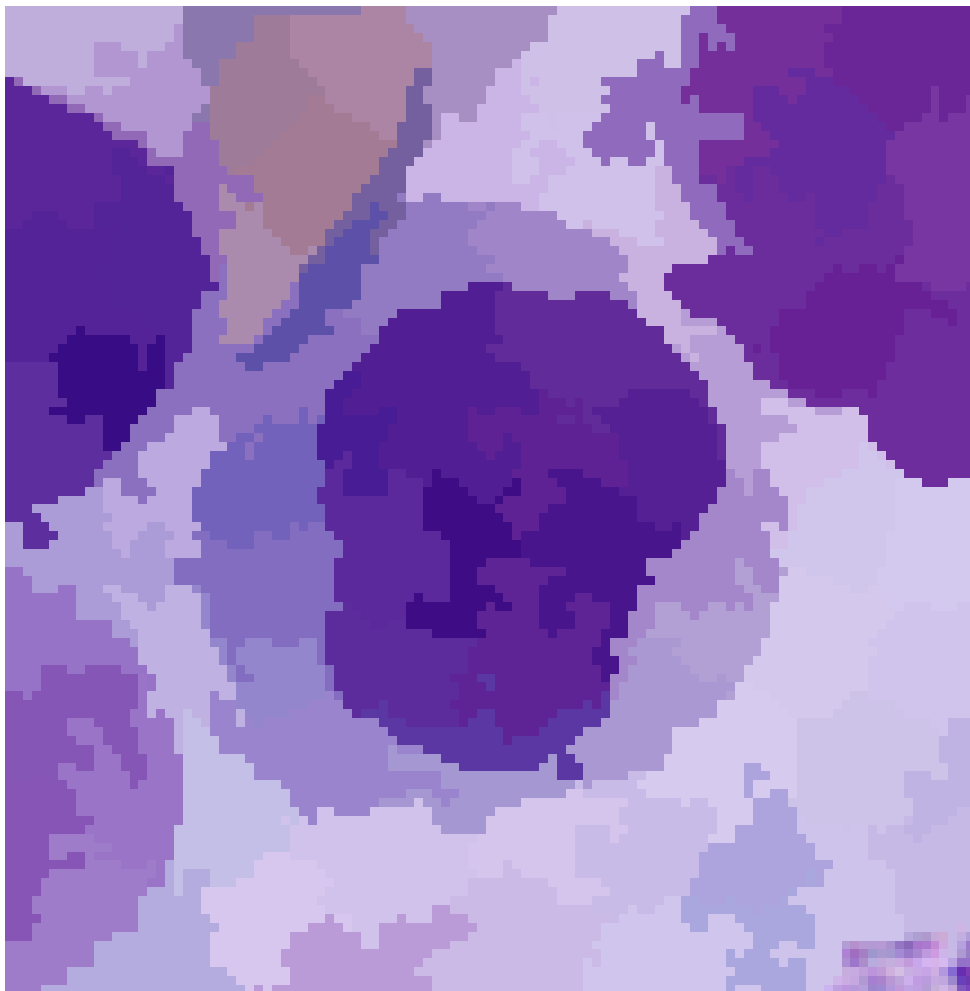
n\_seg:500, cmp:5



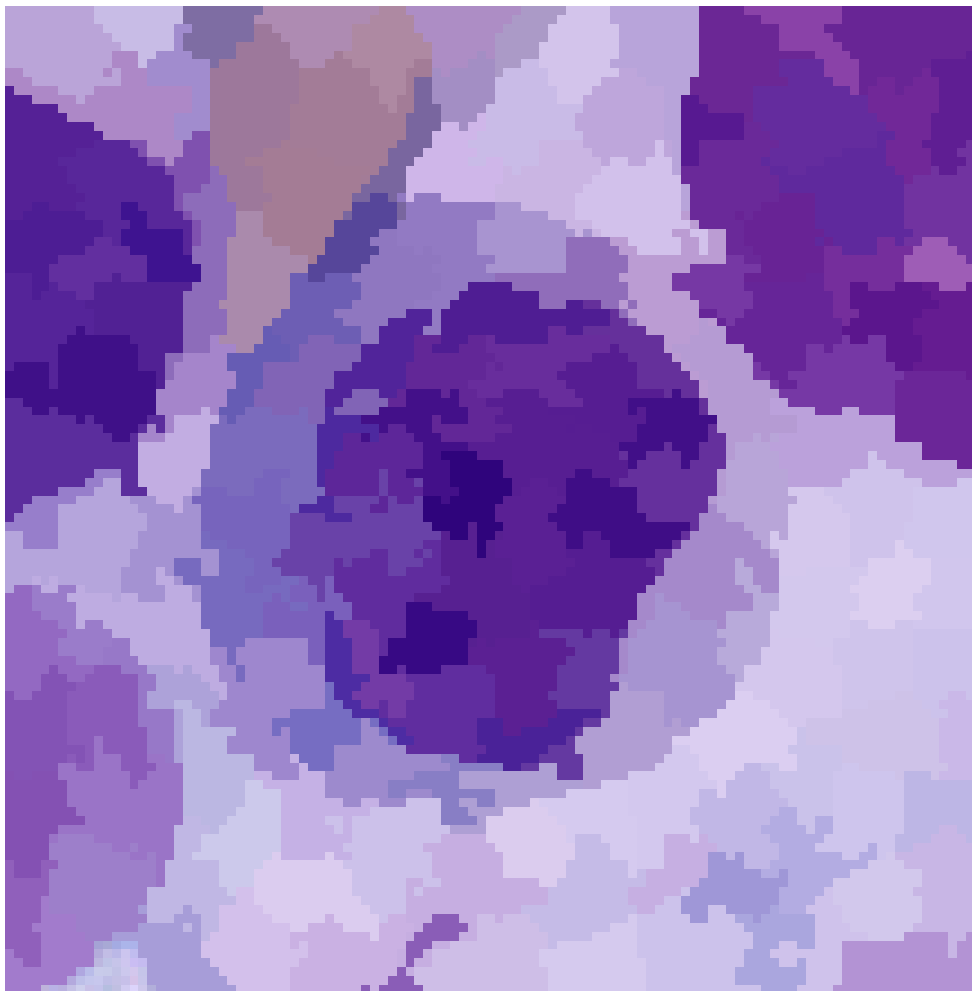
n\_seg:50, cmp:10



n\_seg:100, cmp:10

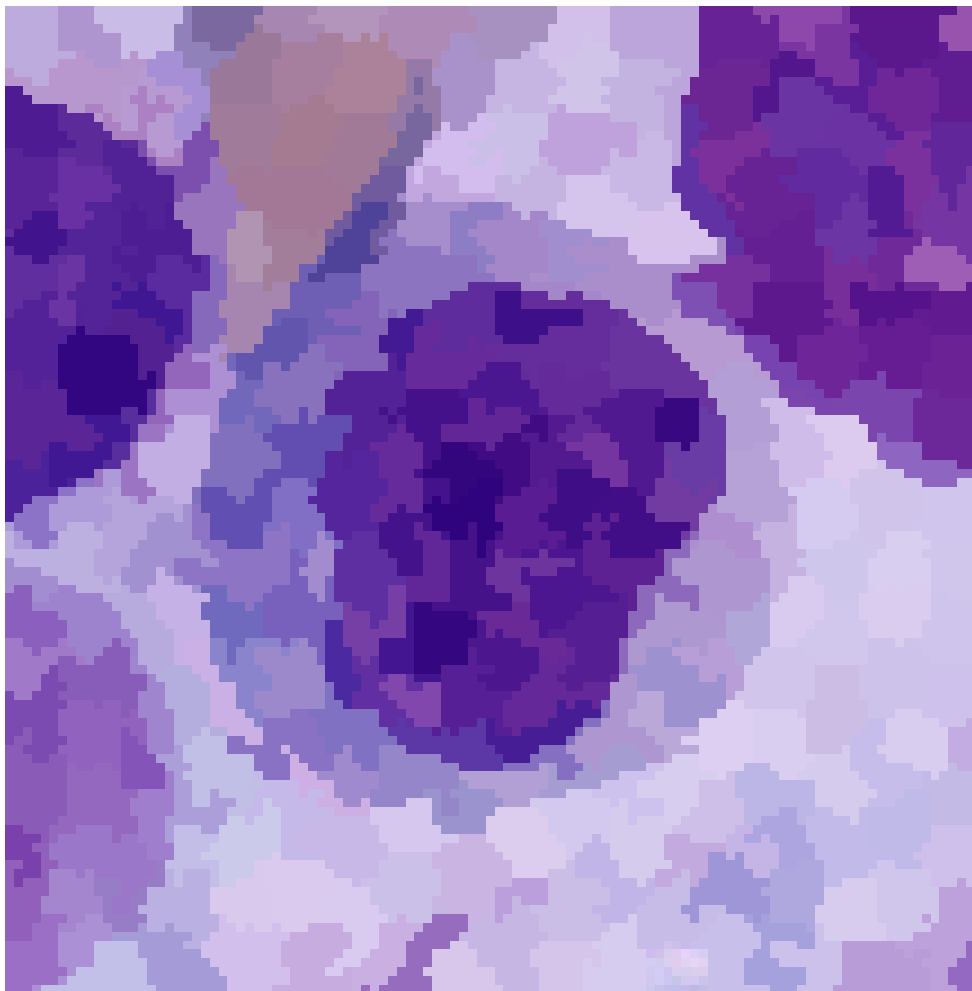


n\_seg:200, cmp:10

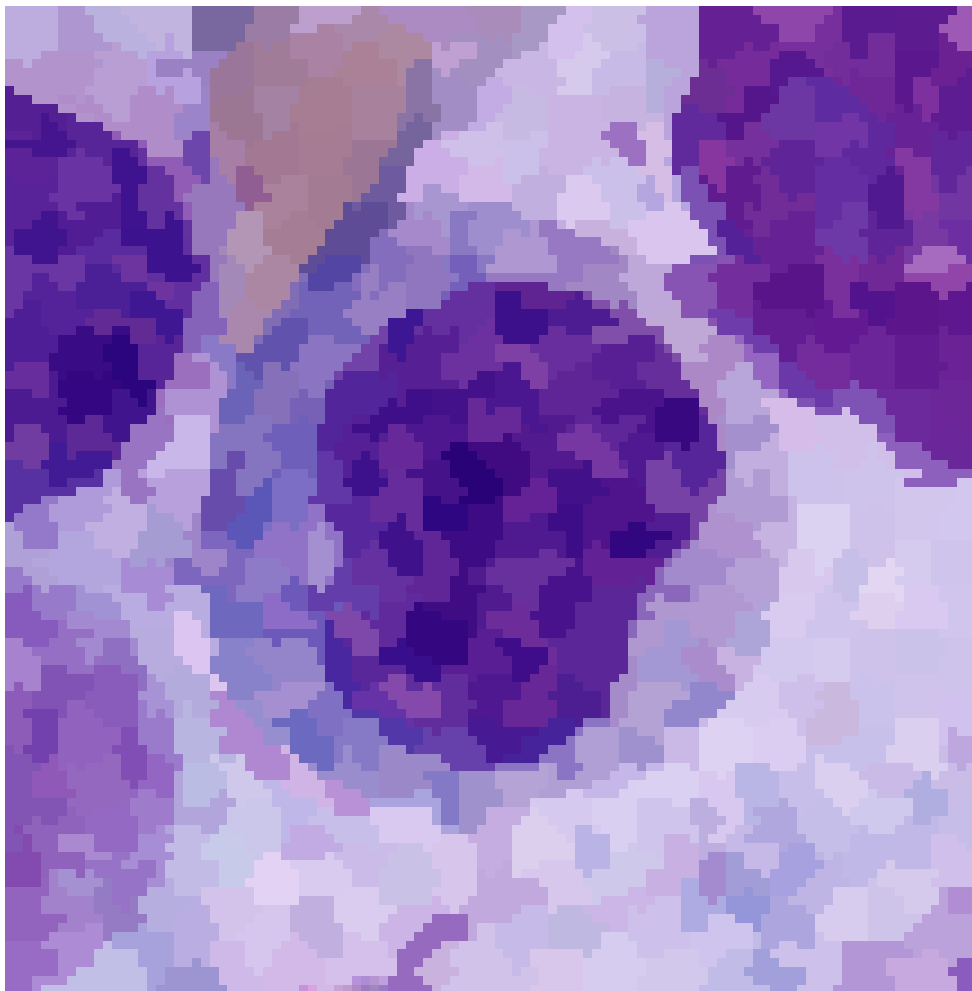




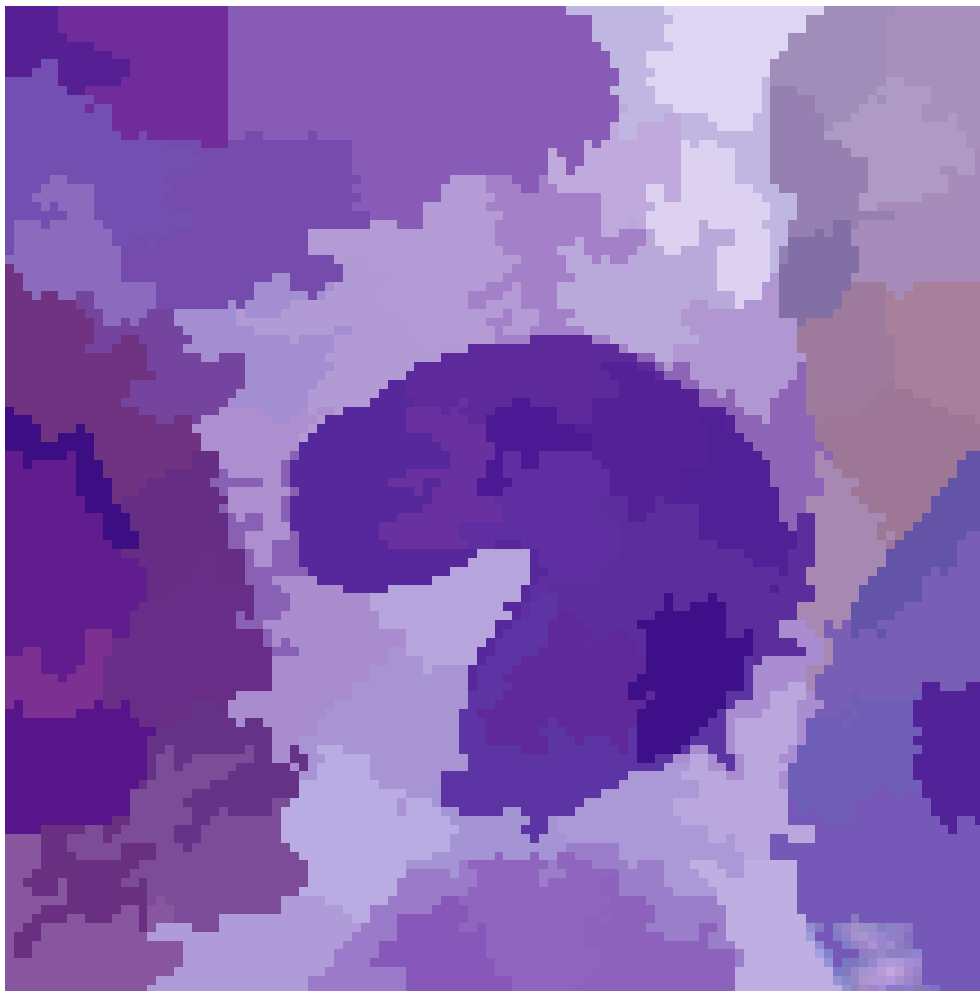
n\_seg:350, cmp:10



n\_seg:500, cmp:10



n\_seg:100, cmp:10



$k = 50, m = 10$

$k = 100, m = 10$

$k = 200, m = 10$

**$k = 350, m = 10$**

$k = 500, m = 10$



$k = 50, m = 5$

$k = 100, m = 5$

**$k = 200, m = 5$**

**$k = 350, m = 5$**

**$k = 500, m = 5$**

$$k = 50, m = 1$$

$k = 100, m = 1.$

$k = 200, m = 1.$



**$k = 350, m = 1$**

$k = 500, m = 1.$

SLIC Superpixel



$$d_c = \sqrt{(l_c - l_i)^2 + (a_c - a_i)^2 + (b_c - b_i)^2},$$

$$d_s = \sqrt{(x_c - x_i)^2 + (y_c - y_i)^2},$$

$$D = \sqrt{d_c^2 + \left(\frac{d_s}{r}\right)^2} m^2,$$

• Pixel as 5D vector:

$$r = \sqrt{n/k}$$

$$[l, a, b, x, y]^T$$



Distance:

Methodology

*Nonnaisation*





***Processing***

segmentation



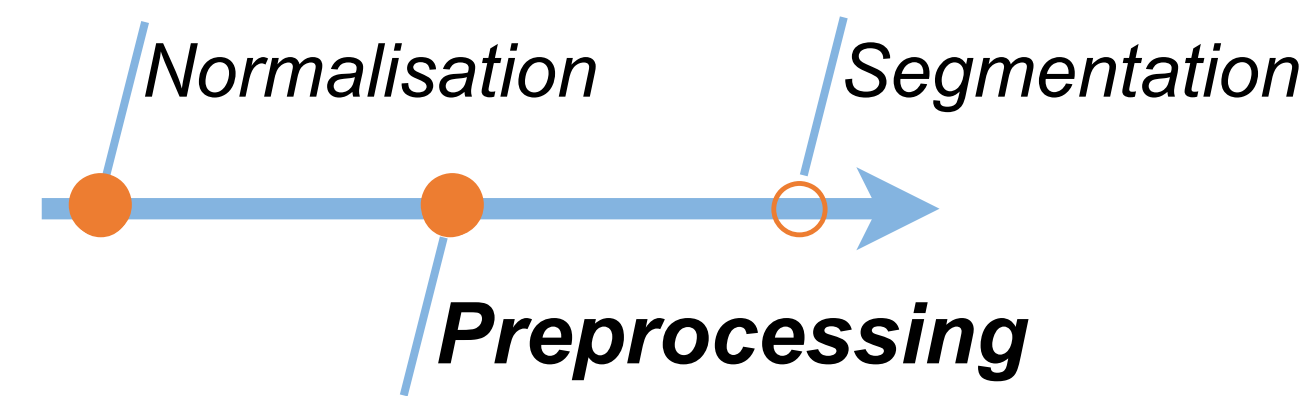








# SLIC Superpixel



## Methodology

- Pixel as 5D vector:  $[l, a, b, x, y]^T$
- Distance:

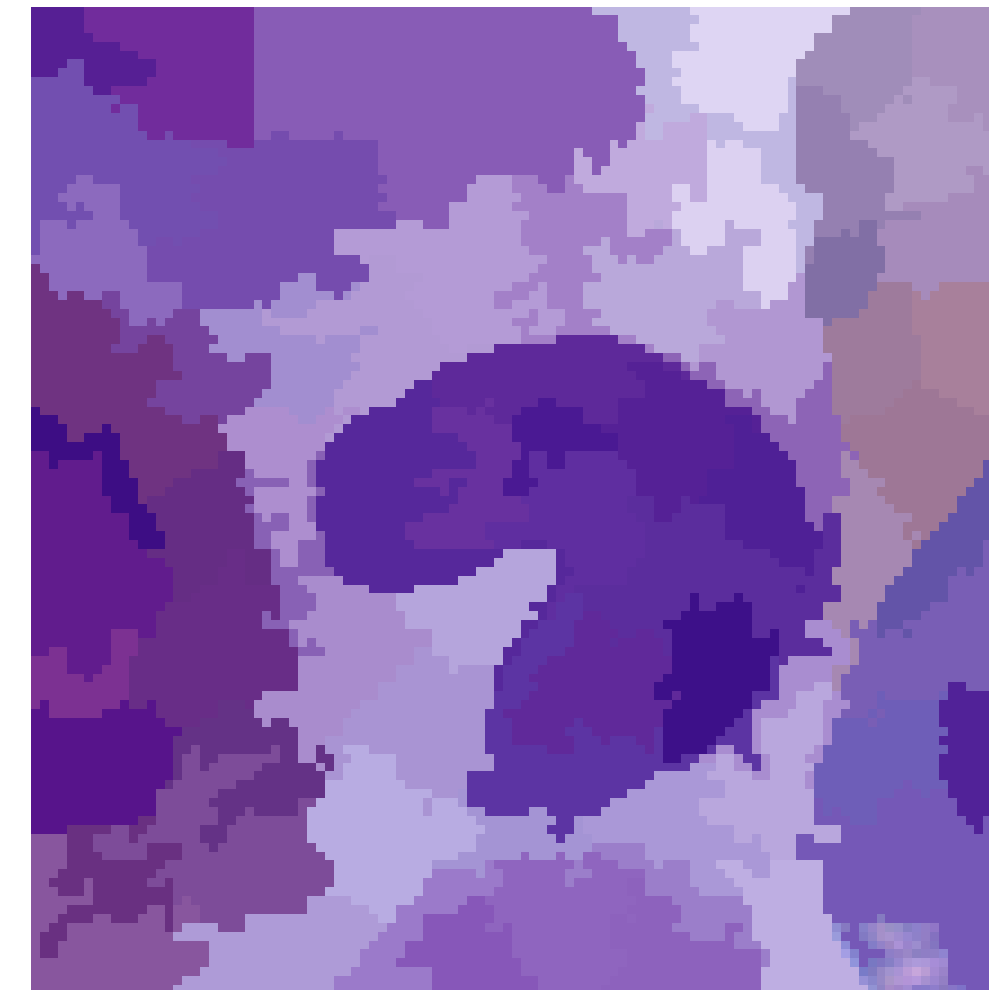
$$d_c = \sqrt{(l_c - l_i)^2 + (a_c - a_i)^2 + (b_c - b_i)^2},$$

$$d_s = \sqrt{(x_c - x_i)^2 + (y_c - y_i)^2},$$

$$D = \sqrt{d_c^2 + \left(\frac{d_s}{r}\right)^2 m^2},$$

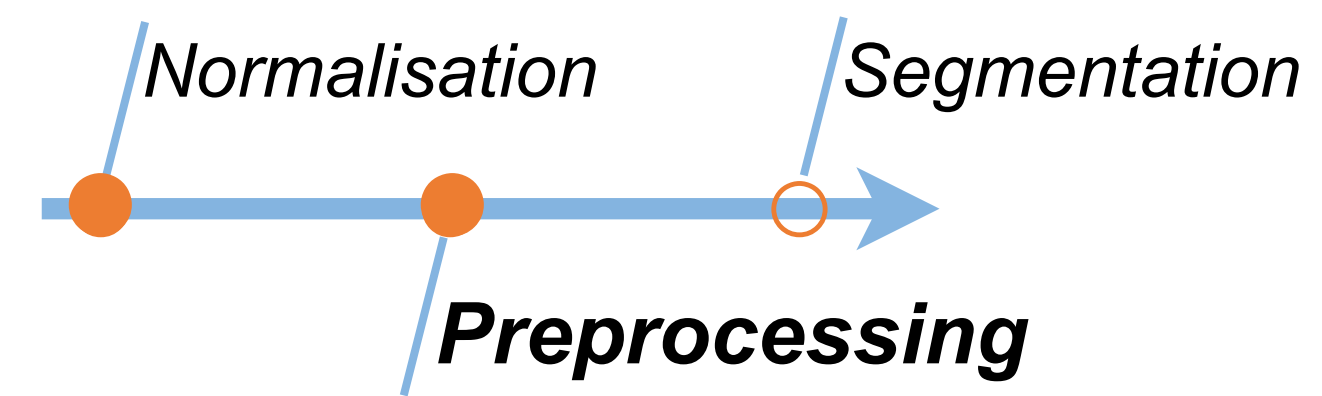
$$r = \sqrt{n_I/k}$$

$k = 100, m = 10$



RAG

Region Adjacency Graphs



Methodology