

Project presentation

Implementation and
evaluation of region growing

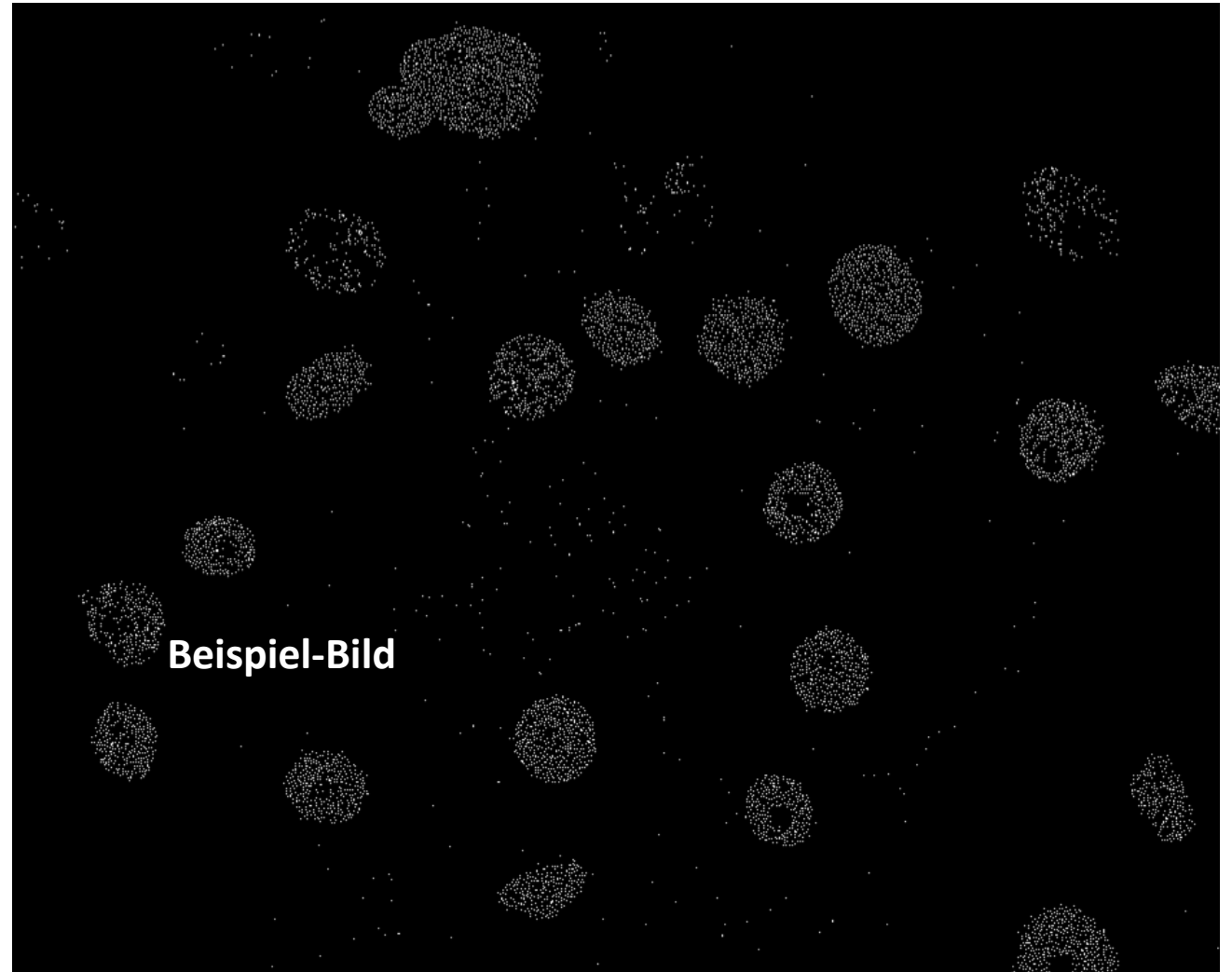
Data Analysis MoBi SS2021

Topic 04: Biomedical image analysis

Tutor: Nicolas Peschke

Group 04: Marie Becker, Ina Jung,
Laura Kaschnitz, Johanna Möller

21st July 2021



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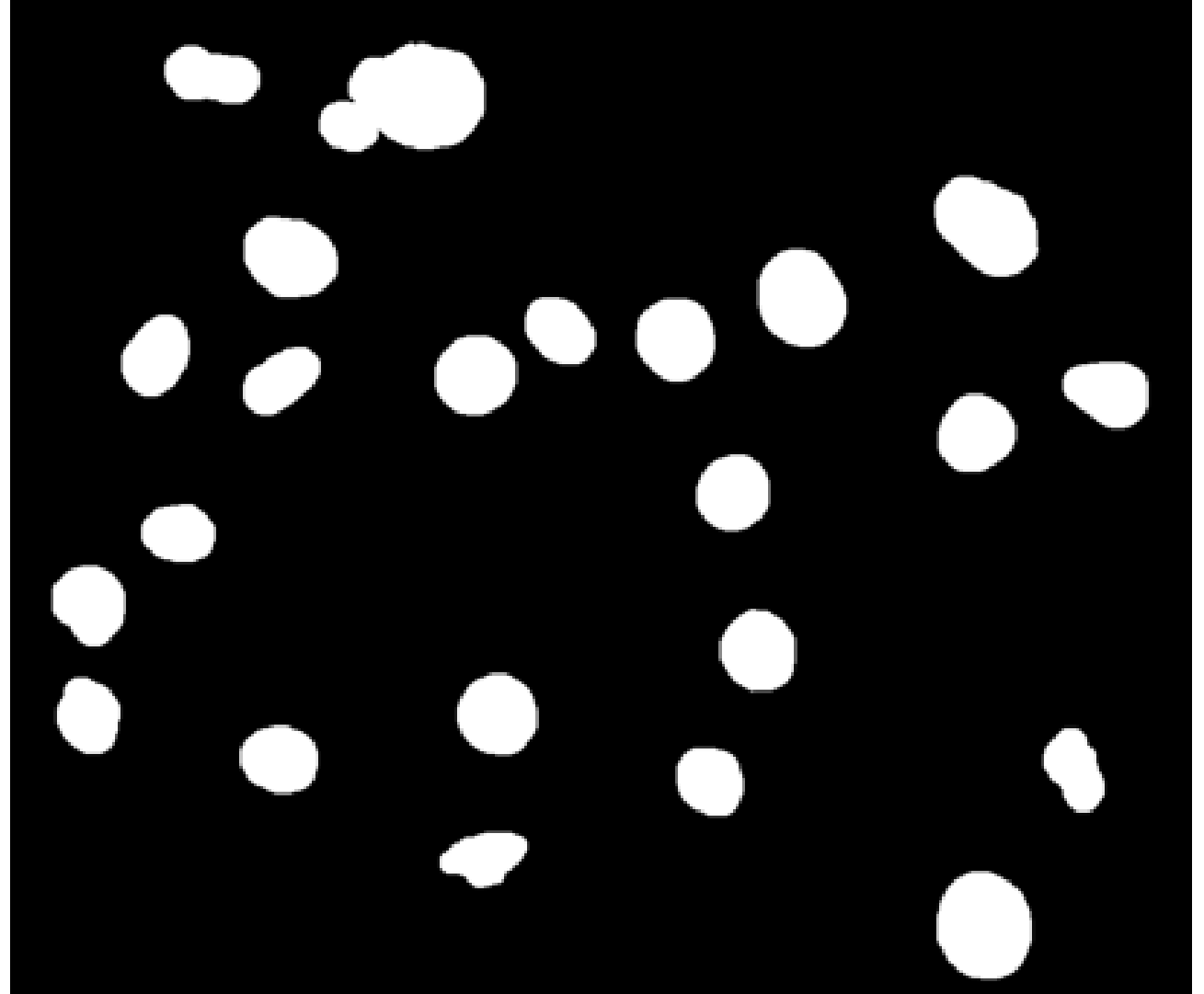
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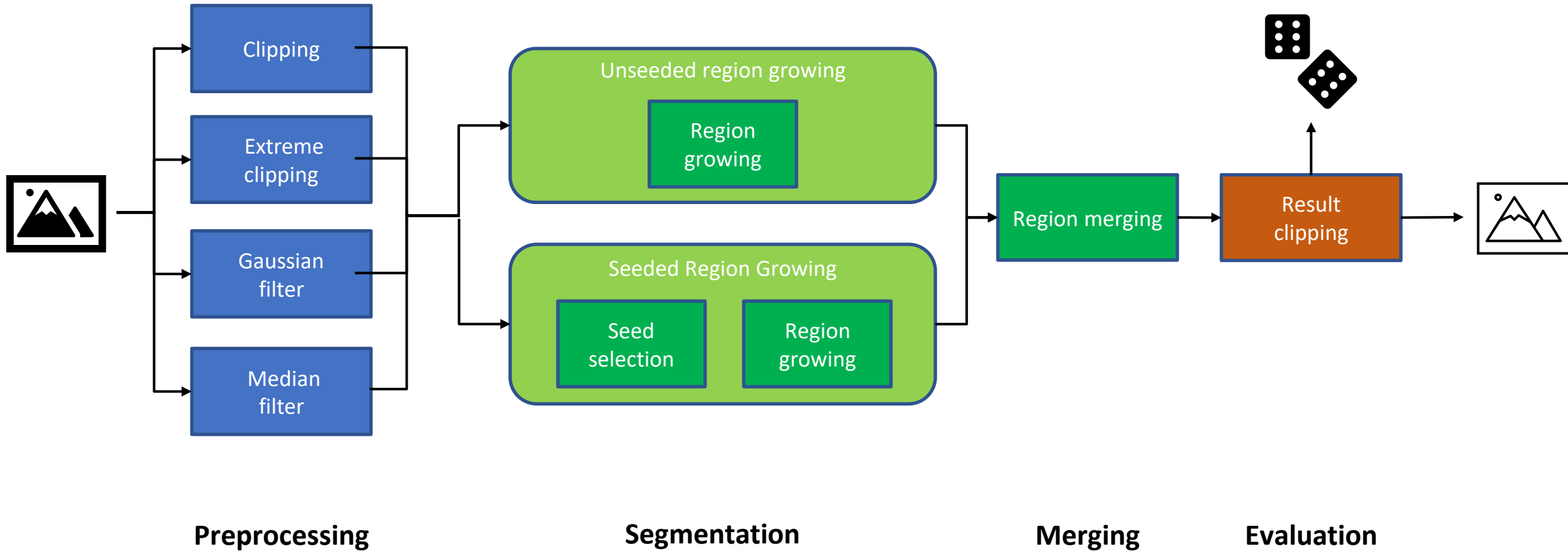




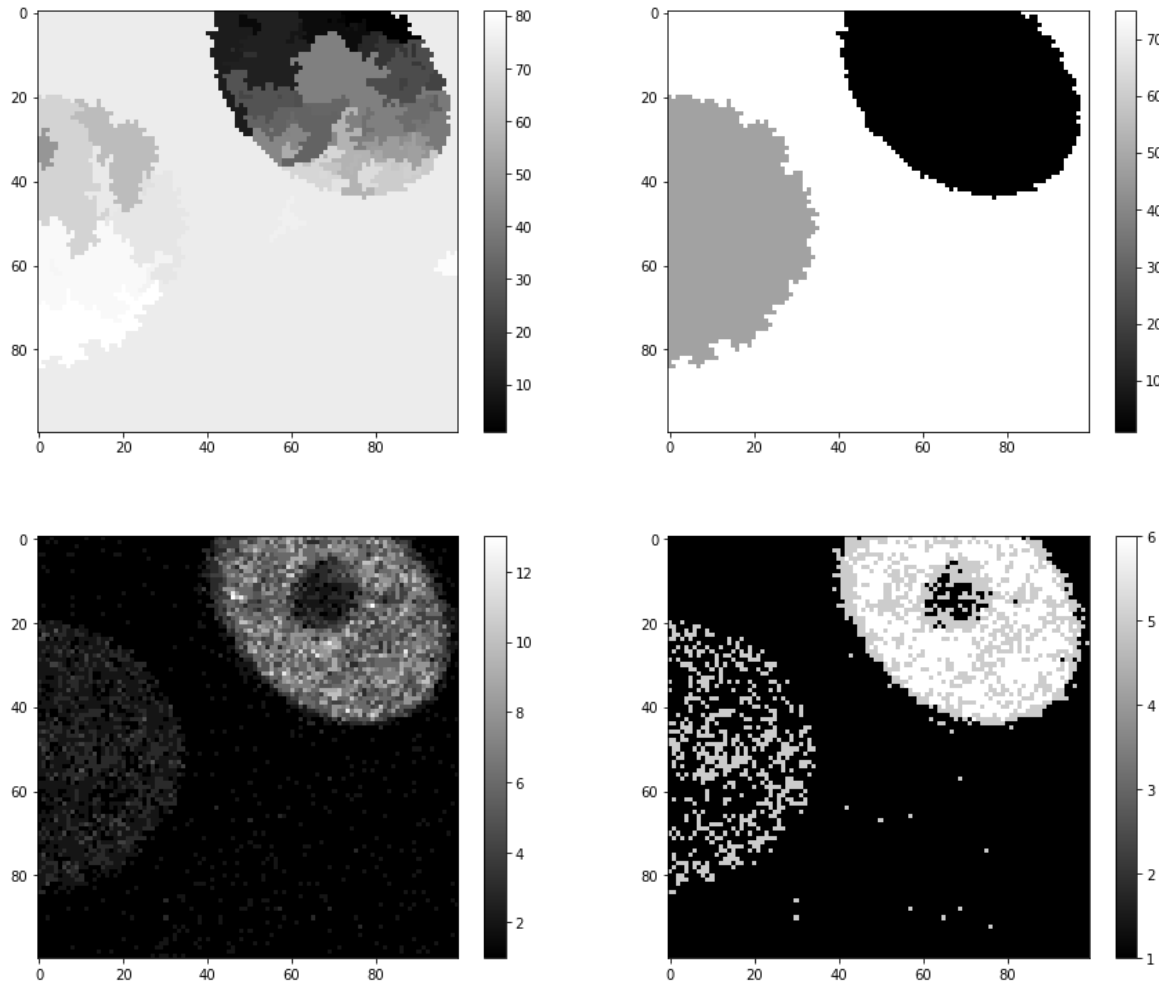
Structure

- Algorithm overview
- Comparison seeded and unseeded region growing
- Dice score
- Evaluation of preprocessing
- Results N2DH-GOWT1
- Results N2DL-HeLa
- Bright spots in NIH3T3 data set
- Blurs and changing background intensities
- Results seeded region growing NIH3T3

Algorithm overview



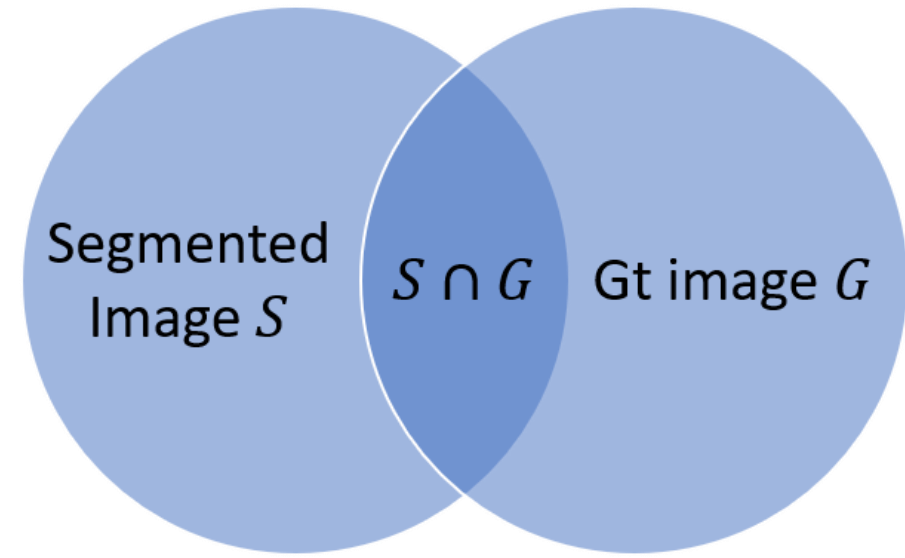
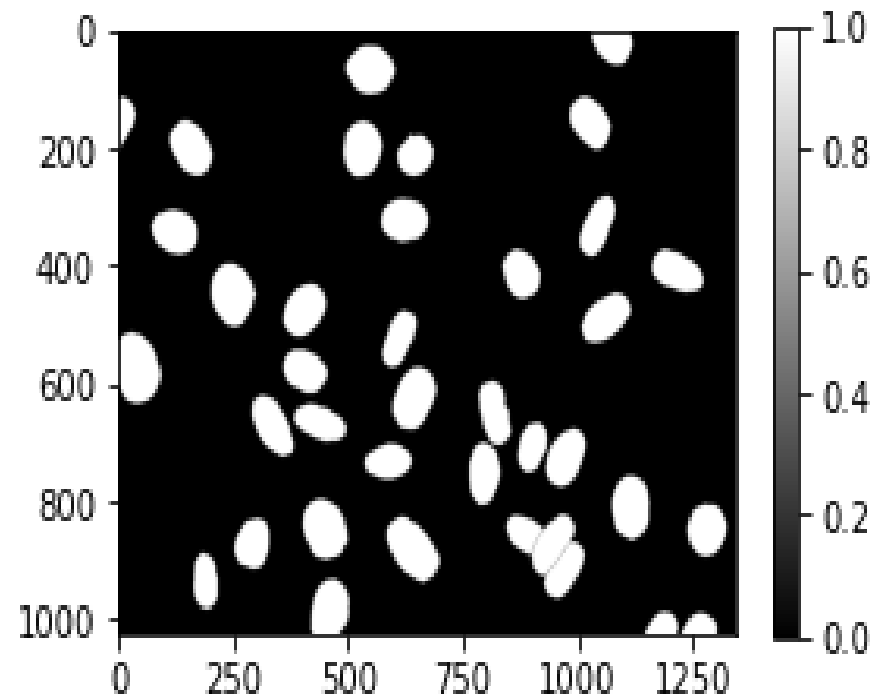
Comparison of algorithms



Differences between seeded and unseeded region growing:

- Number of regions
- Dependency of seeds
- Assignment of pixels
- Intensity distance

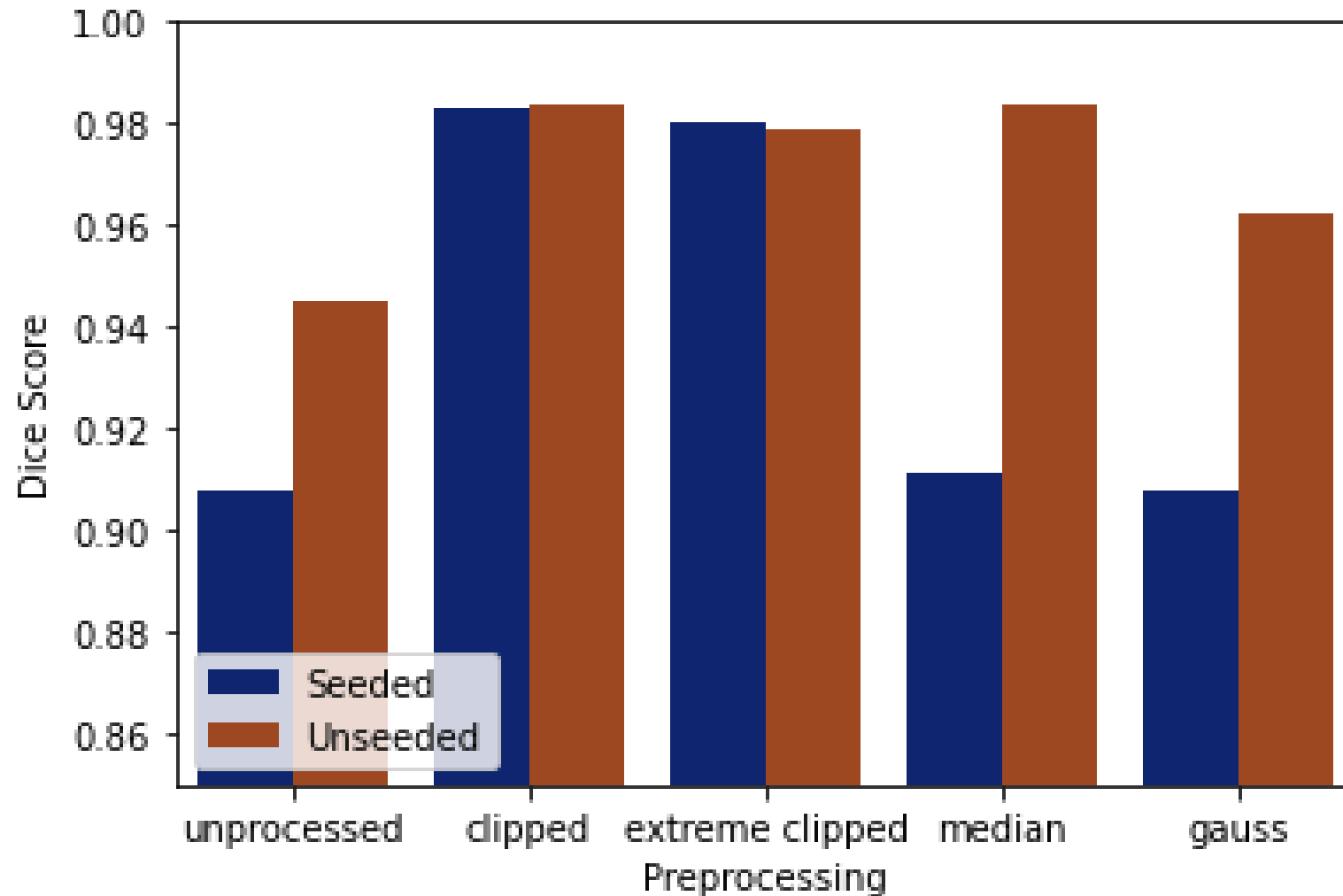
Dice score



$$DSC = \frac{2 * |S \cap G|}{|S| + |G|}$$

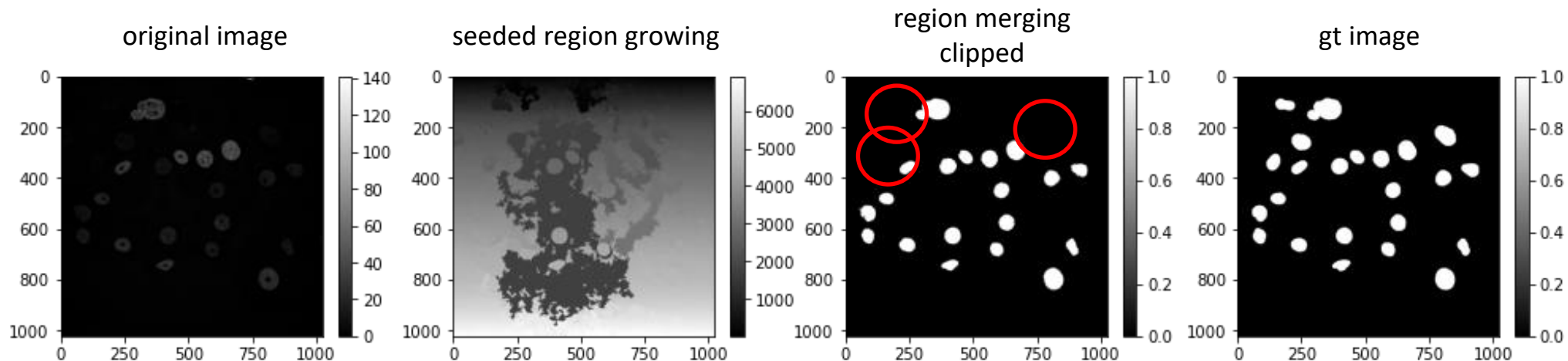
$$\overline{DSC} = \frac{1}{2} \sum_{i=1}^2 \frac{2 * |S_i \cap G_i|}{|S_i| + |G_i|}$$

Evaluation of preprocessing



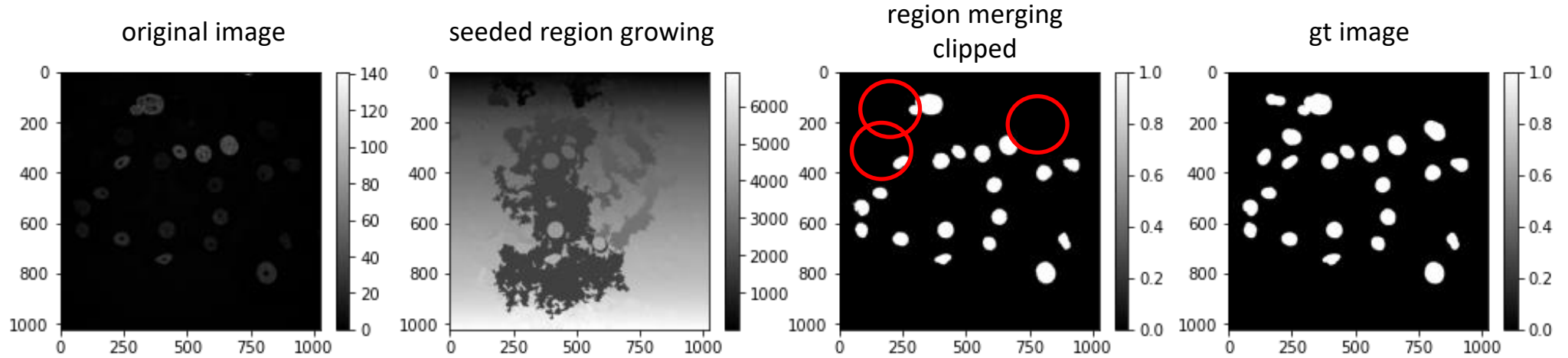
Results N2DH-GOWT1

Seeded region
growing algorithm

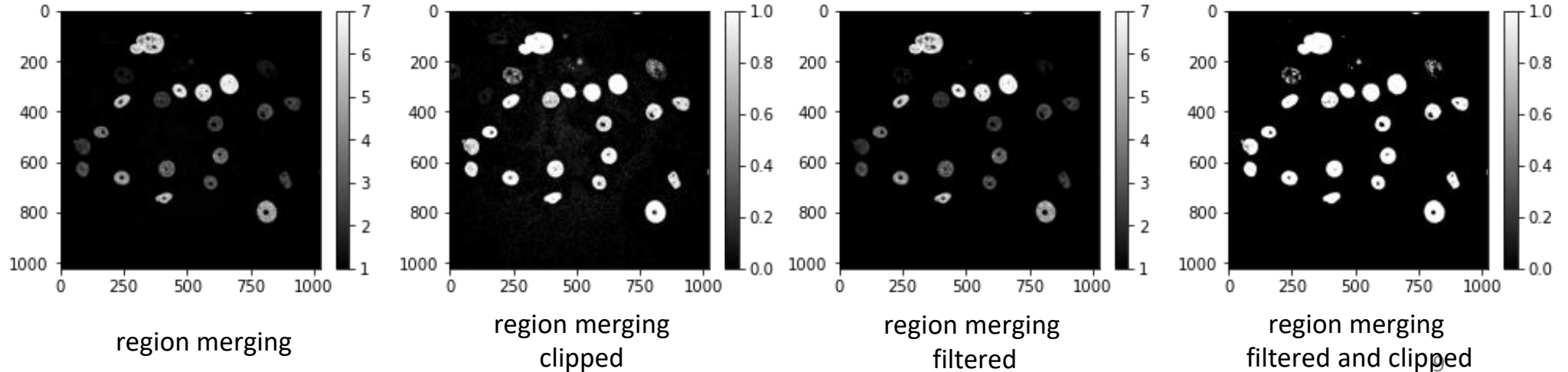


Results N2DH-GOWT1

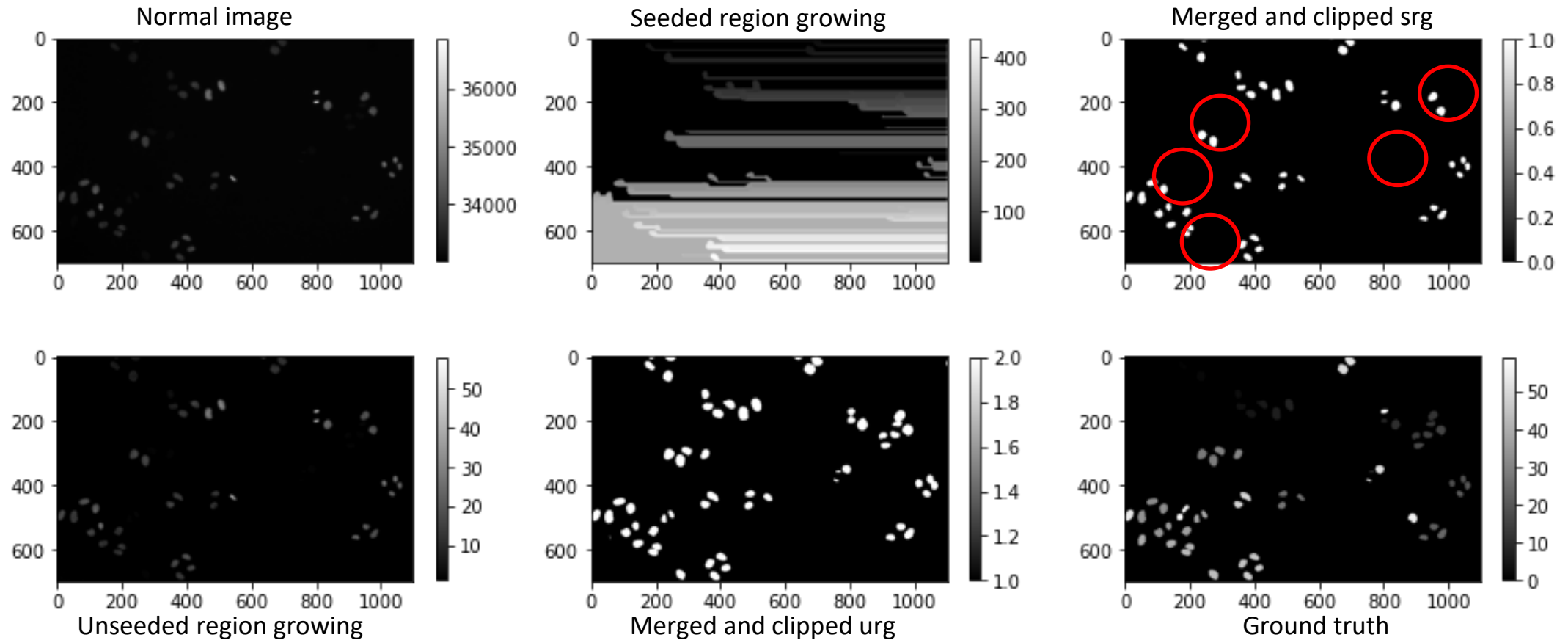
Seeded region
growing algorithm



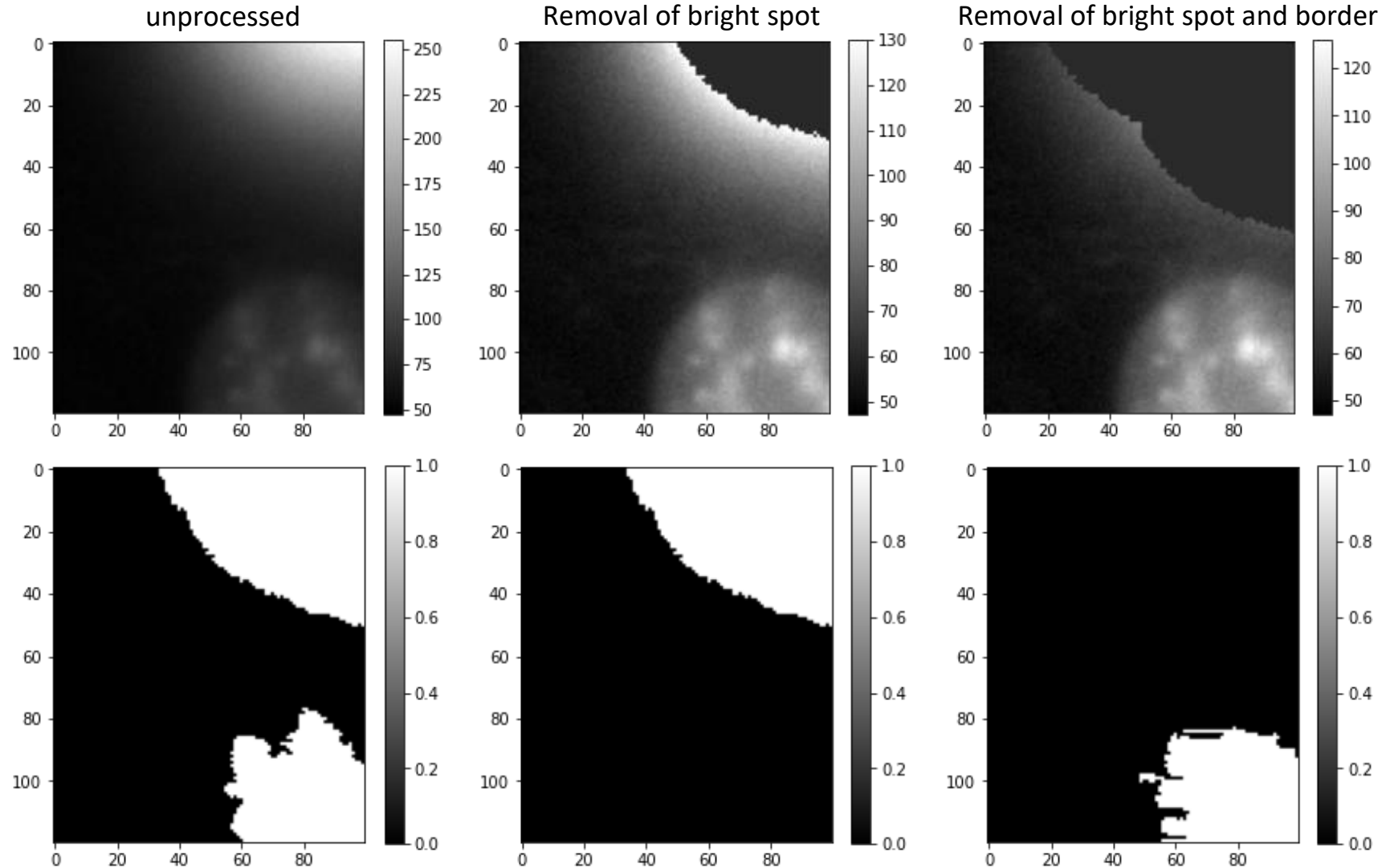
Unseeded region
growing algorithm



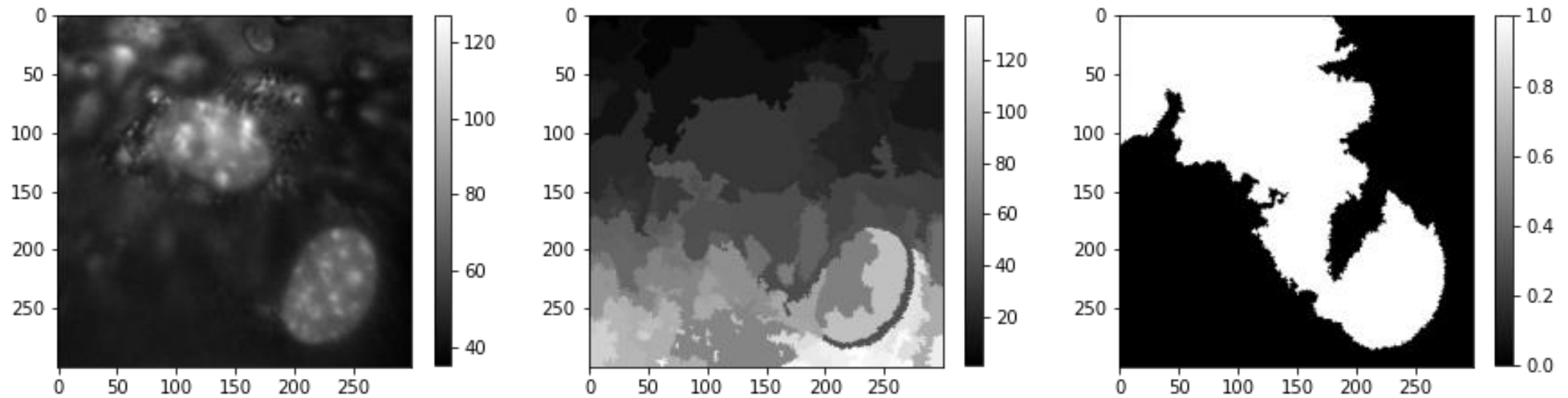
Results N2DL-HeLa



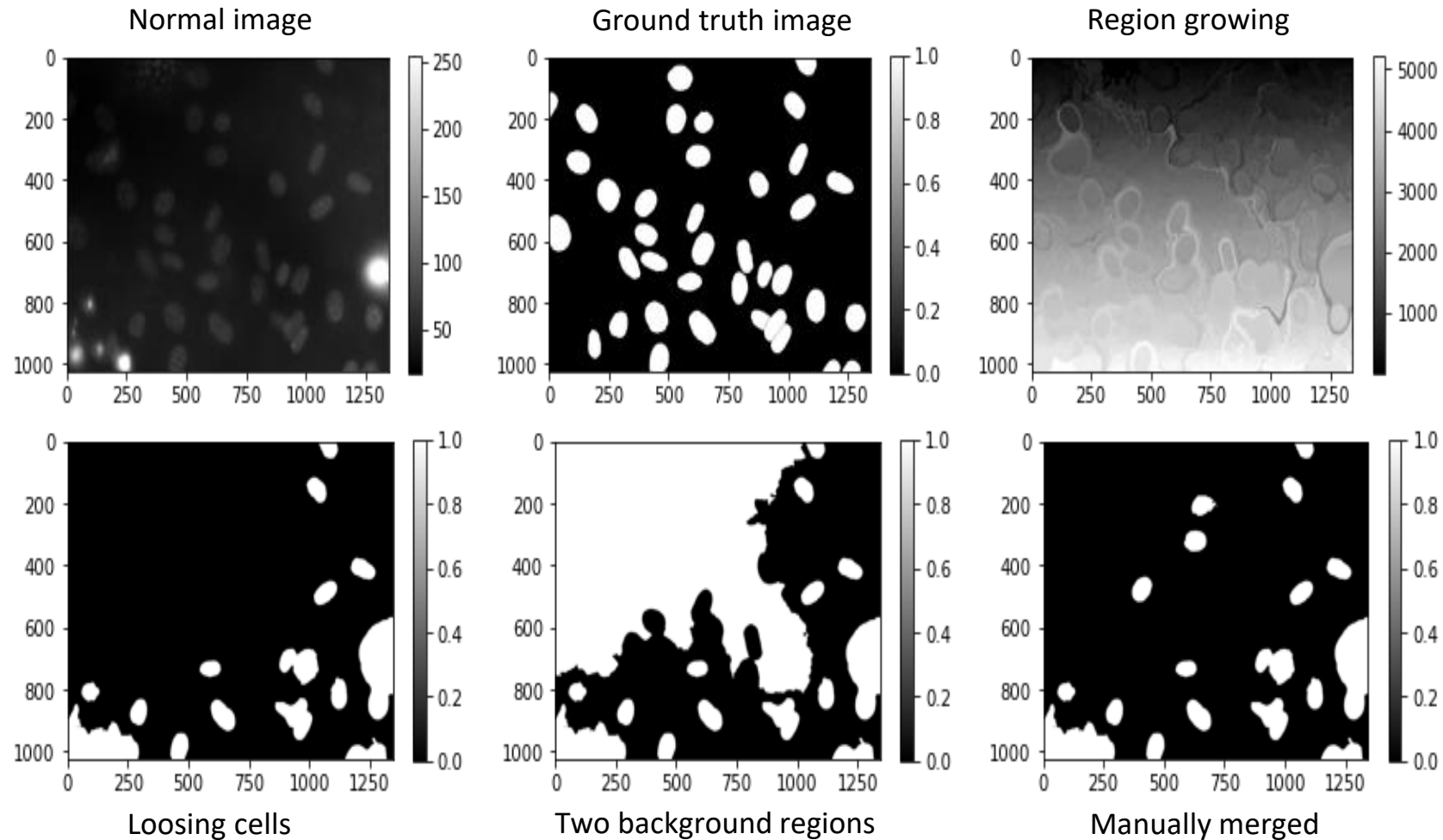
Bright spots in NIH3T3 data set



Blurs and changing background intensities



Results seeded region growing NIH3T3



Results unseeded region growing NIH3T3

