# Deep Learning Techniques in Evaluating Microscopy Images

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Abstract

Cell imaging and analysis is a noninvasive technique that provides essential quantitative data in medical field and that has been gradually passed from medical practitioners to computing units. Imaging is the primary choice when multiparameteric chambers are used and is a good substitute for chemical based techniques that measure cell metabolic activity. Cells may undergo several changes that are directly exhibited in the morphological parameters (area, perimeter, eccentricity, elongation etc). After a microscope image is acquired, the first step is to implement computational microscopy algorithms that can be used to improve the resolution, to remove the noise, and to enhance it. Some of these tasks are conducted using Deep learning techniques which directly enables a faster evaluation of the cell condition in cell culture media. Afterwards the quantitative analysis including classification, detection and segmentation is conducted. Here we will report the cell segmentation accuracy for three different neural netowrk architectures (u-net, u^2-net and u^3-net) in unstained brightfield images.

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## References

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## Figures

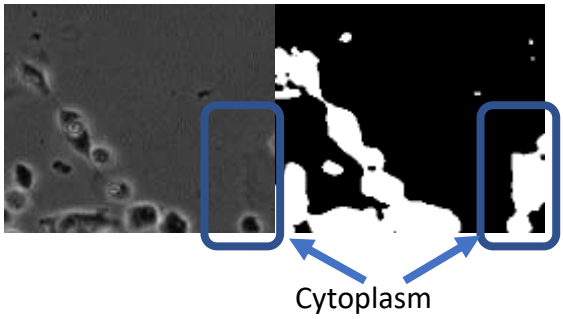


**Figure 1.** Cell components detection using U-net architecture