Master 2 internship : counting objects in biomedical images

Counting objects, such as cells or particles, is an important aspect of biomedical image analysis. The natural way to proceed is to first segment them and then simply count the number of segments. This can be done with well known deep learning models used for instance segmentation. However, in the biomedical field different kinds of problems such as occlusions or optical resolution might turn segmentation into a difficult task.

The aim of this internship is to compare the straightforward solution for object counting described before with other approaches [1-4], based for example on direct prediction of the number of object instances.

Candidates should be familiar with machine learning and image processing. Experience with Python for programming would be a bonus. The internship could lead to a Ph.D. position.

Duration: 4-6 months, starting on between January and March 2019.
Salary: 1100 € / month.

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References

[1] Where are the Blobs: Counting by Localization with Point Supervision, I. Laradji et al, ECCV 2018

[2] Deep convolutional neural networks for human embryonic cell counting, A. Khan et al, ECCV 2016

[3] Count-ception: Counting by fully convolutional redundant counting, J.P. Cohen et al, ICCV 2017

[4] People, penguins and petri dishes: adapting object counting models to new visual domains and object types without forgetting, M. Marsden et al, CVPR 2018