Dr. Florian Levet
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Quantitative Imaging of the Cell
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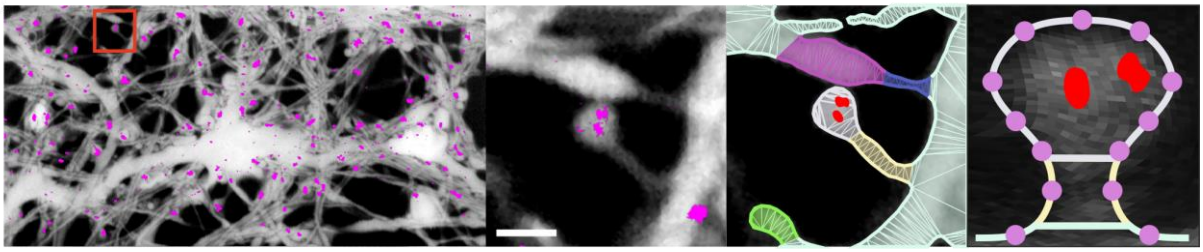
Looking for a Postdoc in Deep Learning and Image Processing at IINS Bordeaux,
"Quantitative analysis of single molecule localization data"

The Quantitative Imaging of the Cell team @ Interdisciplinary Institute for Neuroscience (IINS) is seeking to recruit a motivated Postdoc researcher to combine Deep-Learning and Geometry/Image Processing to define a numerical model of the synapse and several of its constituent proteins.

This work builds on several of our highly successful recent methods (2 Nature Methods [1,2], 1 Nature Communications [3], 1 Methods [4]) ranging from geometry processing [1,3], image processing [4] and microscopy development [2]. This time we want to go a step further by applying them to a crucial biology question, the synapse proteins' organization. More specifically, we want to provide a better understanding on how specific protein-protein interactions regulate synapse dynamics and organization, with important insights on the underlying molecular mechanisms of neurodevelopmental pathologies such as autism spectrum disorders.



In this context, the Postdoc will process the abundant image and single molecule localization data acquired by our unique nanoscopy correlative platform [2] by developing a complete analysis toolbox. This toolbox will allow: (i) efficient segmentation and classification of synapse morphology by using Deep Learning, (ii) automatic quantification of protein organization and dynamics extracted from SMLM data, and (iii) fusion of the nanoscale morpho-dynamic information and creation of an analytical models of the synapse through geometric analysis, parametrization and normalization.

This work will be part of the ANR NANO-SYNATLAS, and will be done in close collaboration with the Thoumine's team (IINS) that will handle all the biology.

Duration

24 months.

Qualifications

The candidates must:

- Have a PhD or equivalent in computer science or a related field,
- And/or proven experience in developing bioimage analysis tools.
- Knowledge and ability in one or more deep learning frameworks (Tensorflow, Keras, Torch, Caffe, etc.), preferably in Python, is required.
- Previous experience working with medical or biological images is prefered.

Scientific Environment

The project will be carried out at the IINS in Bordeaux, France, which is recognized for its expertise in molecular and cellular neuroscience, and which is further embedded within the Bordeaux Neurocampus, a vibrant community of more than 700 neuroscientists.

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The Postdoc will be under the supervision of Dr. Florian Levet, researcher in The Quantitative Imaging of the Cell team. Our team has a strong expertise in the development of microscopy systems and quantitative data analysis for life science. In the past 5 years, the team published several high-impact papers related to quantitative high- and super-resolution microscopy, including 5 in the Nature group [1–3,5,6].

Contact

Send your CV and motivation letter to: florian.levet@u-bordeaux.fr

References

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