



Stage (BAC+5) ingénieur

Société

Le stage se déroulera au sein de la division *Materials and Structural Analysis* de *Thermo Fisher Scientific*. *Thermo Fisher Scientific* est une entreprise multinationale de plus de 60000 employés, présente dans plus de 50 pays et qui génère un chiffre d'affaire annuel dépassant 20 milliards de US\$.

Titre du stage

Elastic volume reconstruction from series of ultra-thin microscopy sections

Période-durée

Février / Mars 2018 – Septembre 2018, 6 mois

Descriptif

Serial-section microscopy is a classic technique for detailed anatomical reconstruction of large biological specimens. Typically, the fixed specimen is embedded in a block of solid medium and then cut into a series of ultra-thin sections. Sections are collected, mounted, individually stained and imaged. Using ultra-thin sections effectively eliminates the penetration problem for both staining and imaging. Furthermore, the minimum achievable section thickness at less than 40 nm is a significant improvement over the axial resolution that can be achieved by optical sectioning techniques such as confocal laser scanning microscopy. Sections can be imaged as mosaics of overlapping image tiles, either manually or using a motorized stage, which allows for the imaging of large fields of view. In combination, these advantages render serial-section microscopy particularly useful for large-scale high-resolution reconstructions of dense neuronal tissue, where the method, mediated by electron microscopy (EM), recently experienced a renaissance.

The downside of the method is that physically cutting a block into sections destroys the continuity between sections and leads to deformation of individual sections. To recover the imaged volume and extract biologically interesting information, as with the reconstruction of neuronal circuits^{2,3,5}, sections need to be aligned and distortion must be removed.

Profil

Elève ingénieur ou master en dernière année, spécialisé en traitement d'images et vision par ordinateur. Bonne connaissance du langage Python.

Lieu du stage

Merignac

Rémunération

Environ 1200 euros brut / mois

Contact

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