MASTER 2
Proposition de stage 2023-2024 - Internship Proposal 2023-2024

Laboratoire d'accueil / *Host Institution*
Intitulés / *Name* : Laboratoire Kastler-Brossel
Adresse / *Address* : 24 rue Lhomond, 75005 Paris
Directeur / *Director (legal representative) :* Antoine HEIDMANN

Equipe d'accueil / *Hosting Team :* Complex Media Optics Lab
Adresse / *Address :* 24 rue Lhomond, 75005 Paris
Responsable équipe / *Team leader* : Hilton BARBOSA DE AGUIAR and Sylvain GIGAN
Site Web / *Web site :* http://www.lkb.upmc.fr/opticalimaging/
Responsable du stage (encadrant) / *Direct Supervisor :* Fei XIA
Fonction / *Position :* Postdoc
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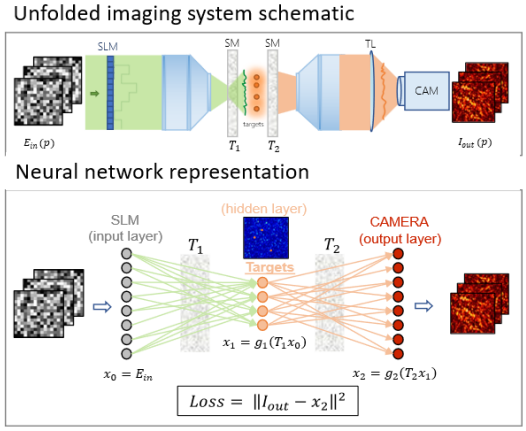
Période de stage / *Internship period* : 31/01/2024 – 31/08/2024

Titre / *Title :* Computational fluorescence microscopy

Projet scientifique (1 page maximum) / *Scientific Project (maximum 1 page):*
Fluorescence microscopy is a key tool for fundamental and translational biological and medical research. However, the current fluorescence microscopes have some limitations due to hardware constraints. These limitations prevent them from being used in some demanding applications.

In our lab, we aim to tackle these challenges using computational methods such as machine learning and physical modeling. Specifically, during this internship, we'll be mostly interested in the following topics:

(1) 3D image reconstruction: improving imaging using tools like neural networks[1] to reconstruct 3D fluorescence objects.
(2) Multi-color imaging: increase the color information from fluorescence images by optimizing algorithms for color information retrieval [2].
(3) Algorithm design and physical modeling: Building physical models of the imaging system and designing algorithms to retrieve object and enhance images.



Our mentoring philosophy: Your career goals matter to us! We're open to adjusting the project to fit your personal growth, learning experiences, and career path. Our projects are very interdisciplinary. So, whether you're into math, physics, engineering, biology, computational science or any related field, we'd love to chat. We're a group of open-minded folks who always encourage learning about new tech and subjects.

Working language: English

[1] d'Arco, et al. (2022). Optics Express, 30(17), 30845-30856.
[2] Soldevila et al., Optica 6, 341 (2019). Sturm et al., ACS Photonics 6, 1409 (2019)