MASTER 2 Fundamental and Clinical Neurosciences

Internship proposal 2026-2027

(internship from January to June 2027)

Host laboratory: *Institute of Cognitive Sciences Marc Jeannerod UMR5229*

Host team : *Cognitive neuropsychology and development*

Internship supervisors : *Liuba Papeo, directrice de recherche CNRS, liuba.papeo@isc.cnrs.fr*

Project title : Visual scene perception

Project summary : Normally, you would not sit on a chair if a cat were sitting on it. Likewise, you would not jump into a pool if piranhas were swimming in it. A meaningful representation of the world—one that supports efficient and adaptive navigation, planning, action, and thought—requires not only recognizing objects such as chairs, cats, pools, and piranhas, but also understanding the relations between them, such as support ("on") and containment ("in"). Extensive research has shown that objects are perceived and recognized rapidly and automatically during visual scene perception. But are relations such as support and containment also extracted rapidly, automatically, and effortlessly during perception? And how are these relations represented relative to the objects themselves?

To address these questions, we conduct research using frequency-tagging electroencephalography (EEG) in human participants. This non-invasive method allows us to measure stimulus-driven neural responses during the rapid visual presentation of images. Our work aims to advance the understanding of scene perception by uncovering how the visual system represents relations between objects, beyond the objects themselves, thereby providing fundamental insights into the neural basis of physical reasoning.

3-5 recent publications :

Abassi, E., & Papeo, L. (2024). Category-selective representation of relationships in the visual cortex. Journal of Neuroscience, 44(5).

Hafri, A., & Papeo, L. (2025). The past, present, and future of relation perception. Journal of Experimental Psychology: Human Perception and Performance, 51(5), 543.

Hafri, A., & Firestone, C. (2021). The perception of relations. Trends in Cognitive Sciences, 25(6), 475-492.

Kaiser, D., Quek, G. L., Cichy, R. M., & Peelen, M. V. (2019). Object vision in a structured world. Trends in cognitive sciences, 23(8), 672-685.