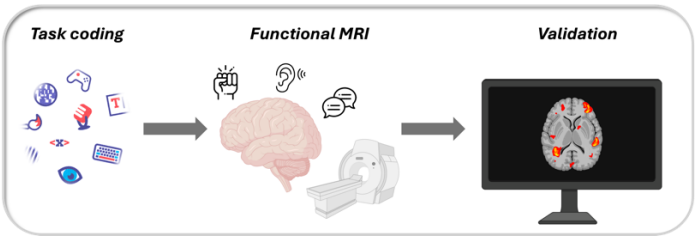
Master project

Location: HUG, CIBM MRI HUG-UNIGE, Boulevard de la Tour 8, Genève

Dates/Duration: Spring/Fall 2025

Developing and Validating fMRI Tasks for Clinical Assessment of Basic Functions

This project aims to create a set of standardized fMRI tasks targeting fundamental brain functions—motor, visual, auditory, and language—using PsychoPy, a powerful tool for creating experimental paradigms. The tasks will be designed to serve as clinical assessment tools for evaluating these basic functions in patients. The project involves coding the tasks, ensuring compatibility with fMRI protocols, and conducting a pilot test with a small group of patients to validate their effectiveness and usability. The outcomes will provide a reliable toolset for clinical use in assessing and diagnosing functional impairments.



References

[1] Genetti M, Grouiller F, Vulliemoz S, Spinelli L, Michel CM, Schaller K. Noninvasive language mapping in patients with epilepsy or brain tumors – Neurosurgery 2013, 72(4):555-65.

[2] Seghier ML, Lazeyras F, Pegna A, Annoni J-M, Zimine I, Mayer E, Michel CM, Khateb A. Variability of fMRI activation during a phonological and semantic language task in healthy subjects – Human Brain Mapping, 2004, 23(3):140-55.

[3] Iannotti GR, Madin I, Ivanova V, Tourdot Q, Lascano AM, Momjian S, Schaller K, Lovblad KO, Grouiller F. Specificity of Quantitative Functional Brain Mapping with Arterial Spin-Labeling for Preoperative Assessment – American Journal of Neuroradiology, 2023, 44(11):1302-08.

Supervisor

- **Main Supervisor:** Giannina Rita Iannotti, CIBM MRI HUG-UNIGE, Giannina Rita Iannotti - CIBM | Center for Biomedical Imaging, giannina.iannotti@unige.ch
- **Co-Supervisor:** Carole Guedj, CIBM MRI HUG-UNIGE, Carole Guedj - CIBM | Center for Biomedical Imaging, carole.guedj@unige.ch

- **Co-Supervisor:** Sébastien Courvoisier, CIBM MRI HUG-UNIGE, Sébastien Courvoisier - CIBM | Center for Biomedical Imaging, sebastien.courvoisier@unige.ch

Skills

Qualifications, previous experience and background:

- Experience with PsychoPy or other experimental design software.
- Basic understanding of fMRI paradigms and neuroimaging data collection.
- Programming skills (Python preferred) for task development.
- Interest in clinical applications of cognitive neuroscience and patient testing.

How to apply: Please send your CV and motivation letter to the main supervisor: giannina.iannotti@unige.ch

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About CIBM

The CIBM Center for Biomedical Imaging was founded in 2004 and is the result of a major research and teaching initiative of the partners in the Science-Vie-Société (SVS) project between the Ecole Polytechnique Fédérale de Lausanne (EPFL), the Université de Lausanne (UNIL), Université de Genève (UNIGE), the Hôpitaux Universitaires de Genève (HUG) and the Centre Hospitalier Universitaire Vaudois (CHUV), with the generous support from the Fondation Leenaards and Fondation Louis-Jeantet.
CIBM brings together highly qualified, diverse, complementary and multidisciplinary groups of people with common interest in biomedical imaging.

We welcome you in joining the CIBM Community.

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