DGCN05 – Practical Training & Thesis

Project proposal

Project title: Semi/Unsupervised extraction of neural representations of behaviour with calcium traces activity

On-site supervisor¹: Melisa Maidana Capitan

Principal Investigator: Francesco Battaglia

Donders Theme(s): Theme 4

Research centre: DCN

Project description:

This project aims to have a better understanding of how and which behavioural features of exploring mice in an arena with objects are represented in brain activity.

In this project, we will explore a data set consisting of brain activity collected with one-photon microscopy (calcium imaging) from behaving mice, and the behavioural tracking while mice do a space-object exploration task [1]. Particularly, this project will be focus in the extraction of behavioural patterns that are not predefined by the researcher and their corresponding brain activity correlate. For that aim, we will use state-of-the-art Machine Learning tools for the definition of relevant exploratory patterns as well as for end-to-end training.

It is required that the candidate have good programming skills and a basic knowledge of Machine Learning.

Relevant literature: [1] Genzel et al. The object space task shows cumulative memory expression in both mice and rats.

¹ If more on-site supervisors are involved, please add their names as well.