SEMINARIO / SEMINAR

***Titolo / Title*:**
Evolutionarily conserved fMRI dynamics in the mouse, macaque, and human brain

***Quando / When*:**
5 Aprile 2023, ore 14:00 / 5th April 2023 at 14:00 CET

***Dove / Where*: Aula Galileo, ITAB**

***Relatore / Speaker*:**
Dr Daniel Gutierrez-Barragan
Post-doctoral fellow, Center for Neuroscience and Cognitive Systems (CNCS) at IIT Rovereto

***Abstract*:**

Networks of synchronized brain activity have been robustly and reproducibly mapped in humans, primates and rodents using resting state fMRI (rsfMRI). Recent research has revealed the fMRI network activity dynamically reconfigures over the time scale of seconds into recurring and reproducible brain states. It is however unclear if the dynamic rules that govern fMRI network activity are species invariant and as such evolutionarily conserved, or if they follow species-specific principles. In my talk, I will illustrate recent research on how rsfMRI network topography and dynamics in these three species is similarly governed by recurrent transitions between a limited set of fluctuating Co-Activation Patterns (CAPs), obtained by clustering fMRI frames given their spatial similarity. I will show how the method is applied to rsfMRI data by clustering fMRI frames given their spatial similarity, and how these spatio-temporal patterns involve resting-state fMRI networks from functional connectivity analyses. I will then describe the rich spatio-temporal features of CAPs and how to compute them, and provide recent applications in diverse datasets. I will also provide a head-to-head comparison of CAPs in mouse, macaque, and human data from recent studies, providing a novel interpretational framework to comparatively investigate whole-brain dynamics between species.