

International Winter School

# MACHINE AND DEEP LEARNING FOR NEUROLOGICAL DISEASES

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**Talk title:**

The study of perceptual development: psychophysical methods, Bayesian modelling and EEG techniques

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From birth, we interact with the world through our senses and movements. How the brain process and transform sensory signals into perceptions and in turn organize the motor output is a major research question in Experimental Psychology and Neuroscience. Psychophysics investigates the relationship between stimuli in the physical domain and sensations or perceptions in the psychological domain. It provides a corpus of well-established methods to study and formulate models of perception. In the presentation, I will briefly review the principal methods used in psychophysics to measure sensory thresholds and perception in general. Then, I will present the Bayesian approach to model perceptual data and the EEG approach to study brain mechanisms associated with sensory processing. In doing that I will introduce how physical stimuli are transduced into sensory signals by our peripheral sensory apparatus, as well as how sensory signals are integrated to form a unique multisensory percept of the environment.