



Cognitive Science Colloquium

Summer term 2024

Tuesday 12.15 – 13.15 h; Lecture Hall 08, Neue Aula

When	What
16.07.2024 12.15 – 13.15	<p>Prof. Dr. Moritz Grosse-Wentrup (University of Vienna): Computations on the Neuronal Manifold</p> <p>In computational neuroscience, the design of handcrafted models of neuronal circuits has been highly fruitful in elucidating how neuronal computations are realized in small model systems. Recent developments in neuronal imaging techniques, such as calcium imaging, have expanded the scope of study to larger neuronal populations and complex behaviors, overwhelming traditional analysis methods. As a result, machine learning and AI models are increasingly adopted to analyze the relation between neuronal dynamics and behaviors. However, it remains uncertain whether these techniques can provide the same mechanistic insights as traditional methods in small models or what new advancements they offer in cognitive neuroscience. In this talk, I present our efforts to develop AI algorithms that infer the algorithms implemented by neuronal dynamics from neuronal data. While an algorithmic description of a neuronal system does not per se provide mechanistic insights into how a neuronal circuit realizes its computations, I argue that the algorithmic level provides valuable insights into how neuronal dynamics give rise to cognition and its disorders. I showcase our results on calcium imaging data recorded in the nematode <i>C. elegans</i>.</p>

Host: Felix Wichmann

Organisation: Elisabeth Hein and Volker Franz

Welcome to everybody!