MAX PLANCK SCHOOL of cognition

Monday, 17 April 2023, 16:00 (CET)

Cognition Colloquium

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Technical, conceptual and practical considerations on neuroimaging-based prediction of cognitive phenotypes

The long predominant paradigm in neuroimaging has been to compare (mean) local volume or activity between groups, or to correlate these to behavioral phenotypes. Over the last decades, the increasing availability of large cohorts and tools for multivariate statistical learning, allowing the prediction of individual cognitive or clinical phenotypes in new subjects, started a revolution in imaging neuroscience. While the field has enjoyed a lot of enthusiasm recently, with medical and non-medical applications on the horizon, the road towards translation and re-life applications may be considerably more challenging than often acknowledged. Following a short overview on the motivation and perspectives, the major part of my talk will be focus on several critical yet often underappreciated challenges for such endeavors. These include on the one hand technical and biological aspects that may undermine the validity of prediction results, in particular due to the inherent low-dimensional structure of biological variability. On the other hand, ethical, legal and societal aspects will ultimately will shape practical adaptation but need stronger consideration in the development of new pipelines if these are to move beyond proof-of-concept work.

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