Bonn-Cologne Computational Neuroscience Seminar

Reconceptualising psychopathology using machine learning and big data

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Talk Abstract

Mental disorders present a public health challenge of enormous proportions, yet disorders are still diagnosed purely on the basis of symptoms and no biomarkers have been developed to assist treatment allocation or predict outcome. In this talk I will describe conceptual innovations that enable us to make progress in this impasse and work from our group that aims to address this problem by applying machine learning methods to population-level 'big data' cohorts containing measures of neurobiology, ecological smartphone monitoring and remote sensing environmental data.

I will argue that we need to re-think conventional conceptions of psychopathology in order to effectively stratify cohorts and predict the onset, course and outcome of disorder trajectories. I will describe a series of statistical and machine learning techniques we have developed to provide such a reconceptualisation, including 'brain growth charting' techniques that allow us to chart variability at the level of each individual and techniques rooted in the statistics of extremes that allow us to reconceptualise pathology as extreme deviations from an expected pattern.

I will illustrate this discussion by showing applications of these methods to cross-diagnostic psychiatric cohorts and I will argue that these innovations provide a principled method to move beyond simple statements about group averages and can instead provide a way to dissect the inherent heterogeneity in mental disorders, ultimately providing a route to bring precision medicine to psychiatry.

Friday, 16 June 2023, 12 pm

In-Person**:**
University of Bonn Medical Center
Epileptology/ Building 83
Seminar room (room 266), Ground Floor

Online:
https://uni-bonn.zoom.us/j/62321512510?pwd=ZC9SMDdBRGoxQ1ZLamwvYjZBc0pXUT09

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