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Involved in research of dynamic complex brain systems of healthy subjects and mental disorders such as ADHD mental retardations and others.



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## The brain as a complex system of neuronal networks

Summary points 1<sup>st</sup> advanced meeting of neuroscientific psychiatry 4<sup>th</sup> Oct 2013

The meeting opened with the framing of the need to advance psychiatric diagnosis from a descriptive diagnosis to an etiopathological brain-related taxonomy. The scope of the meetings was formulated as a genuine interdisciplinary effort to generate collaborative forces that would work together toward achieving the goal of formulating a brain-based diagnostic taxonomy for psychiatric disorders.

The lecturer started by reviewing the basic fundamentals of the different brain imaging technologies and the differences between them, during the talk a discussion begun toward a deeper issue of signal processing related to identifying connectivity patterns in the brain.

Traditional interpretations such as correlation and sliding window assessment were mentioned, as well as other causal assessment methods such as Granger causality test i.e., a statistical hypothesis test for determining whether one time series is useful in forecasting another.

Examples of such analysis during a semantic language test was described and initial explanation of more general neural network organization terminology was described, for example "small world network" and the concepts of "hubs."

Because the talk involved a substantial portion of discussion one of the psychiatric residents related the findings of semantic language brain representations to the illogical disturbed thought process and delusions of schizophrenia patients.

This link made between clinical phenomenology and brain related disturbances is at the focus of this seminar.

In the next meeting, Prof' Hendler will go much deeper into this realm of correlating brain activity of mental disturbances.

<http://neuroanalysis.org.il/wp-content/uploads/2011/09/פרופ-תלמה-הנדלר-מרצה-בשער-מנשה.pdf>