SFB 874/INI - COLLOQUIUM

Wednesday, June 27th, 12 -1 pm

Location: NB 3/57

Decoding the human brain using EEG and MRI

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Abstract:

This talk will cover two different areas of research on decoding non-invasive brain signals: (1) the use of big data neuroimaging and genetics resources for decoding brain disorders, and (2) the use of electroencephalographic recordings to control assistive technology devices by means of a Brain-Computer Interface.

Psychiatric disorders are among the main contributors to morbidity and disability around the world, yet in contrast to other fields of medicine, clinical decision making in psychiatry still today largely relies on symptom descriptions rather than biology. The talk will discuss how novel big data resources of neuroimaging and genetics data may be utilized toward biology-informed precision medicine in psychiatry and how this can lead to an increased understanding of processes underlying brain maturation and dysfunction.

Another field of research – Brain Computer Interfaces – attempts to decode electroencephalographic signals from the brain of individuals with severe motor paralysis for controlling assistive technology devices. The talk will describe developments of such systems as an alternative communication channel as well as for wheelchair control.

Each of the fields has progressively advanced over recent years, yet faces numerous challenges still. Can they learn from each other?

Hosts: Sen Cheng (Institut für Neuroinformatik, RUB)

Johannes Lederer (Faculty of Mathematics, RUB)

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