

# Faculty Club - June 8, 2018

12:00 – 1:30 pm, RWTH Guesthouse

Danilo Bzdok, RWTH Aachen

## *Data Science in Neuroscience: Clash between data-analysis cultures*

Biomedical datasets are constantly increasing in resolution, sample size, and meta-information complexity. This paradigm shift opens the brain imaging field to a more data-driven machine-learning regime (e.g., minibatch optimization, structured sparsity, deep learning). Yet, analysis methods from the domain of classical statistics remain dominant (e.g., ANOVA, Pearson correlation, Student's t-test).

Special interest may lie in the statistical learning of scalable generative models that explain brain function and structure. Instead of merely solving classification and regression tasks, they could explicitly capture properties of the data-generating neurobiological mechanisms. A series of projects for such supervised and semisupervised machine-learning techniques will be provided as applications to the currently largest neuroimaging datasets from the Human Connectome Project data-collection initiative as well as the prospective epidemiological UK Biobank. The emphasis will be put on diverging data-analysis philosophies with their diverging interpretational consequence.

The successful extraction of structured knowledge from current and future large-scale brain datasets will be a critical prerequisite for our understanding of human brain organization in healthy populations and patients with brain disease.



Danilo Bzdok studied medicine between 2006 and 2012 at the RWTH Aachen, the Université de Lausanne and the Harvard Medical School. During his studies he received, among other things, a grant from the German National Academic Foundation and a doctoral scholarship as part of an international graduate program. For his dissertation at the RWTH (2012) he was awarded the Grünenthal, the Friedrich Wilhelm and the Hans Heimann Prize. From 2013 to 2015, he earned another doctorate in computer science from the Heinrich Heine University in Düsseldorf, working on machine learning in collaboration with the INRIA Saclay & Neurospin Research Center, Paris, supported by a doctoral scholarship from the Studienstiftung des deutschen Volkes. Since September 2015, Danilo Bzdok heads the Section "Social and Affective Neurosciences" at the Department of Psychiatry of the RWTH Aachen as a junior professor and is a Principal Investigator in the DFG-IRTG2150 in close cooperation with the University of Pennsylvania, USA. In 2017 he was named "Rising Star" by the American Psychological Association (APS), and in 2018 he received the Young Scientist Award from the German Society for Biological Psychiatry.

## Registration

Please register [here](#) by Monday June 4, 2018 or send an email to [facultyclub@ers.rwth-aachen.de](mailto:facultyclub@ers.rwth-aachen.de)

Please note that a [contribution](#) of 15 Euro for lunch snack and beverages will be requested on site. Based on your registration, we make a binding order to the catering company. We therefore ask for your understanding that the cost contribution is due unless you cancel your registration by noon of the previous day at the latest.