SEMINAR

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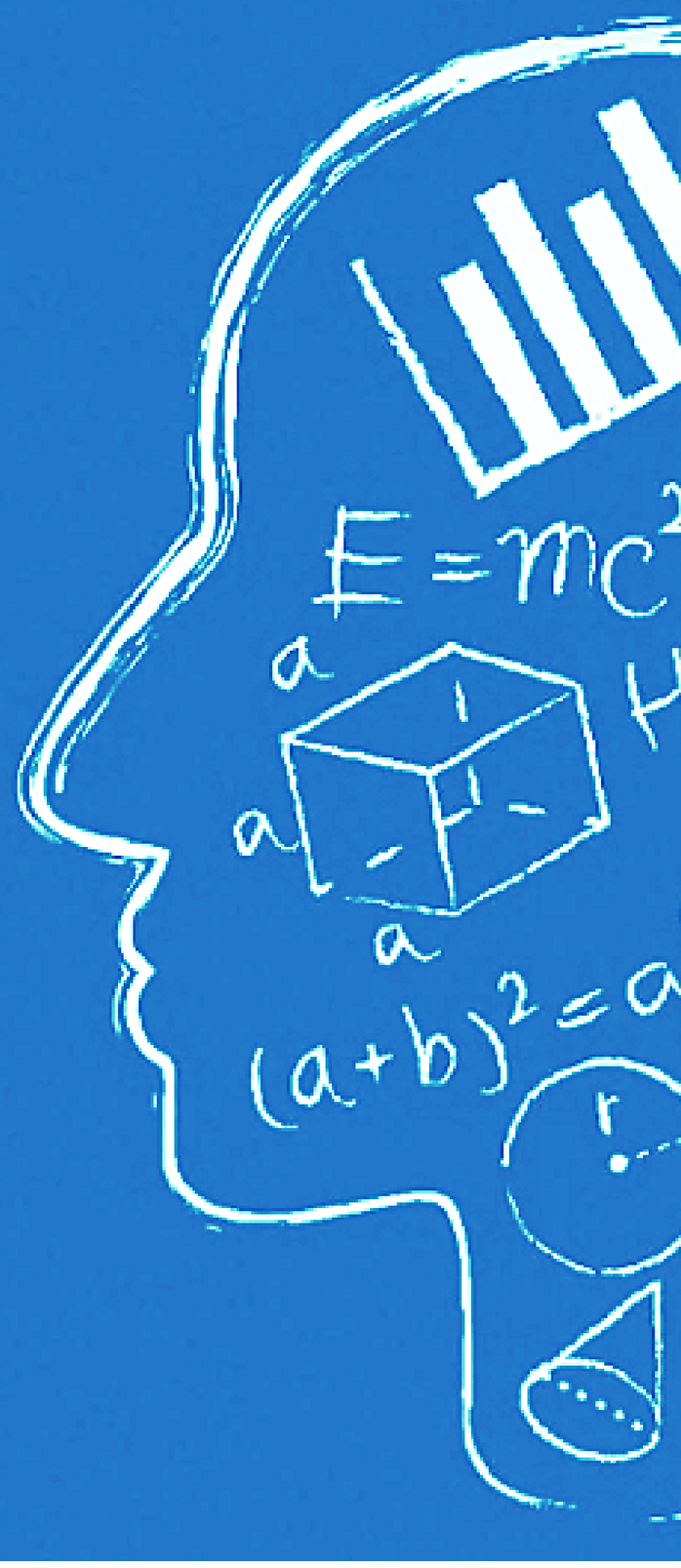

STATISTICAL BOOSTING, ADVANCED STATISTICAL MODELING AND CLINICAL REALITY

ABSTRACT:

Biostatisticians nowadays can choose from a huge toolbox of advanced methods and algorithms for prediction purposes. Some of these tools are based on concepts from machine learning; other methods rely on more classical statistical modeling approaches. In clinical settings, doctors are sometimes reluctant to consider risk scores that are constructed by black-box algorithms without clinically meaningful interpretation. Furthermore, even both accurate and interpretable models will not often be used in practice, when it is based on variables that are difficult to obtain in clinical routine or when its calculation is too complex.

In this talk, I will give a non-technical introduction to statistical boosting algorithms which can be interpreted as the methodological intersection between machine learning and statistical modeling. Boosting is able to perform variable selection while estimating statistical models from potentially high-dimensional data. It is mainly suitable for exploratory data analysis or prediction purposes. I will give an overview of some current methodological developments (including the development of polygenic scores) and provide an example of the construction of a clinical risk score with surprisingly simple solutions.

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14:00

ZOOM

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Andreas Mayr is Professor of Statistical Methods in Epidemiology at the Department of Medical Biometry, Informatics, and Epidemiology of the Rheinische Friedrich-Wilhelms-Universität of Bonn (GER). He obtained his Ph.D. in 2013 at the Friedrich-Alexander-Universtität Erlangen-Nürnberg (GER), where he worked as a post-doc until 2017. After a year of interim professorship at the Ludwig-Maximilians-Universität of München (GER), he becomes Head of WG Statistical Methods in Epidemiology and Deputy Head of the Department of Medical Biometry, Informatics and Epidemiology of the Rheinische Friedrich-Wilhelms-Universität of Bonn (GER). His research interests include statistical boosting; generalized additive models for location, scale, and shape; quantile regression; prediction inference, and prediction intervals.