

HPI Colloquium

12.11.2020, 4.00 pm

Hasso-Plattner-Institut, Hörsaalgebäude, Hörsaal 1
and via tele-TASK and Zoom
Campus Griebnitzsee, 14482 Potsdam

“Personalizing health interventions using a platform for digital N-of-1 trials”

Dr. Stefan Konigorski
Postdoctoral Researcher

Abstract

Traditionally, guidelines and recommendations on health interventions have been obtained from studies of large groups of individuals. However, the derived average intervention effects do not allow meaningful predictions whether an intervention will help any given individual.

In this talk, I will present our platform which allows to evaluate the effectiveness of health interventions on an individual level by implementing so-called N-of-1 trials. In N-of-1 trials, every participant compares different health interventions of interest over time. The data generated from N-of-1 trials are hence single time series, usually within complex causal graphs, and the goal is to test interpretable effects of the interventions. Current methods for analysis are largely based on standard statistical models from randomized controlled trials, which are not flexible enough to integrate potentially high-dimensional data and complex causal graphs. I will present several flexible methods that we have developed which perform powerful tests of both direct and indirect causal effects. They include kernel-based tests in mixed models and estimating equations methods. In addition, I will outline methods that I am planning to develop for adaptive N-of-1 trials and for trials designed by the study participants.

In summary, we have developed a first-of-its-kind platform that promises to evaluate the effect of health interventions both for the individual but also on the population level. We are planning to make the platform available for studies world-wide and to realize its potential to integrate medical research and clinical care.

Short CV

Stefan Konigorski is a postdoctoral scientist in the Digital Health & Machine Learning group at the Hasso Plattner Institute. In his research, his main focus is on developing a platform to conduct digital health intervention studies and developing statistical and machine learning methods to derive causal effects from complex observational and experimental studies. In addition, he is teaching, supervising students and contributing to a BMWi-funded project that aims to help small and medium-sized companies in using AI technologies.

He received his Diplom in Mathematics from the University of Heidelberg in 2011 and M.Sc. in Biostatistics from the University of Toronto, Canada, in 2013 while working in Toronto at the Mount Sinai Hospital and Dalla Lana School of Public Health. Before joining the HPI in 2019, he obtained his PhD from the Humboldt University of Berlin in Computer Science in 2018, in which he developed and applied novel statistical methods based on copula functions and estimating equations that improved the power of state-of-the-art association tests of omics data at the Max Delbrück Center for Molecular Medicine. See <https://hpi.de/lippert/team/stefan-konigorski> for more information.

Host: Prof. Dr. habil. Katharina Hölzle, MBA