

Causal Machine Learning

Graduate Center Masterclass

Speaker: Michael Knaus (University of Tübingen)
Date and Time: 12 May 2023, 9h – 18h
Place: “Francine D. Blau” room no. 3.3.002B, DIW, Mohrenstr. 58, 10117 Berlin

This planned GC Masterclass provides a crash course on important concepts in the recent causal machine learning literature. It highlights connections to well-known concepts in econometrics and connects dots between causal ML methods. It will cover the following contents:

1. Short intro/recap of Supervised Machine Learning (9-11h)
 - (i) General goal of supervised ML
 - (ii) Lasso
 - (iii) Random Forest
2. Estimation of average treatment effects (11-13h)
 - (i) Double selection
 - (ii) Partially linear Double ML
 - (iii) Augmented inverse probability weighting Double ML
3. Estimation of conditional average treatment effects (CATEs) (14-16h)
 - (i) Why this is a hard problem
 - (ii) Causal trees and causal forests
 - (iii) R-learner
 - (iv) DR-learner
4. Policy learning (16-18h)
 - (i) Why this is a different problem than CATE estimation
 - (ii) Offline policy learning with binary and multiple treatments
 - (iii) Pitch of multi-armed bandits

About the instructor: [Michael Knaus](#) is Assistant Professor of “Data Science in Economics” at the University of Tübingen. His research interests are at the intersection of causal inference and machine learning to answer questions in empirical, mostly labor, economics. In particular, he is interested in the estimation of average and heterogeneous treatment effects as well as policy learning.

If you want to join the masterclass, please register with the Graduate Center. Please note that the usual first-come, first-served procedure applies: gradcenter@diw.de