The Bayesian causal forest model: regularization, confounding, and heterogeneous effects

P. Richard Hahn, Arizona State University

January 29, 2021- 12:00-1:15pm

https://uconn-cmr.webex.com/uconn-cmr/j.php?MTID=mc19e545b14cc3a980ffc36760a5ce5f4

In this talk, I will describe recent work on Bayesian supervised learning for conditional average treatment effects. I will motivate the proposed Bayesian causal forest model in terms of fixing two specific flaws with previous approaches. One, our model allows for direct regularization of the treatment effect function, providing lower variance estimates of heterogeneous treatment effects. Two, by including an estimate of the propensity score as a control variable in our model we mitigate a phenomenon called "regularization induced confounding" that leads to substantial bias in previous approaches. I will conclude with a detailed discussion of designing simulation studies to systematically investigate and validate machine learning models for causal inference.

Note: Dr. Hahn may also talk about this tutorial a bit:
https://math.la.asu.edu/~prhahn/xbcf_demo.html

Bio: Professor P. Richard Hahn has a B.A. in Philosophy of Science from Columbia University and earned his PhD in Statistics from Duke University in 2011. He taught at University of Chicago Booth School of Business for seven years before joining the School of Mathematical and Statistical Sciences at Arizona State University in 2017. His research lies at the intersection of machine learning and causal inference, specifically tree based regression methods for estimating heterogeneous treatment effects. Other research interests include latent variable models and statistical decision theory. He enjoys road trips in the mountain southwest with his family and riding and working on bicycles.

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Full WEBEX Info for this talk: (Friday, Jan 29, 2021 12:00 pm)

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