Causal Inference Course

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Causal Inference and Machine Learning

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Course Description

The course will cover topics on the intersection of causal inference and machine learning. There will be particular emphasis on the use of machine learning methods for estimating causal effects. In addition there will be some discussion of basic machine learning methods that we view as useful tools for empirical economists.

Lectures

There will be six lectures.

Background Reading

We strongly recommend that participants read these articles in preparation for the course.


Course Outline

1. Introduction to Causal Inference


   (c) Imbens, Guido W., and Jeffrey M. Wooldridge. ”Recent developments in the econometrics of program evaluation.” Journal of economic literature 47.1 (2009): 5-86.

2. Introduction to Machine Learning Concepts


3. Causal Inference: Average Treatment Effects with Many Covariates


4. Monday 2.30-4.00pm: Causal Inference: Heterogeneous Treatment Effects


5. Causal Inference: Experimental Design and Multi-armed Bandits


6. Synthetic Control Methods and Matrix Completion
