Northwestern | Department of Economics

Short Course for Faculty and Graduate Students

Introduction to Debiased Machine Learning

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Holder of the Erwin Plein Nemmers Prize in Economics

MONDAYS AND WEDNESDAYS, NOVEMBER 2, 4, 9 AND 11
12:00NOON-1:20PM
KELLOGG GLOBAL HUB, 2211 CAMPUS DRIVE, ROOM 3301

The short course of four lectures addresses a central question in modern empirical work: how can researchers use flexible machine-learning methods to estimate high-dimensional or nonparametric components of a model while conducting inference on the economic or causal parameter of interest?

The lectures combine empirical examples with the theory that explains why these methods work and how they can be adapted to other settings. Topics include double lasso, prediction using lasso, neural nets and random forests, automatic debiased machine learning, Neyman orthogonality, cross-fitting, double robustness; and conditional influence functions.

The course is intended for PhD students who have completed Northwestern's first-year PhD econometrics sequence. It should be useful both to students doing applied empirical work and to those interested in the econometric foundations of machine learning. Faculty interested in learning about these topics are also very welcome to attend.