



High Dimensional Nonstationary Time Series

IRTG 1792 Short Course

Toru Kitagawa

Learning Optimal Policies: Empirical Welfare Maximization Approach

This lecture presents recent developments in the literature of evidence-based design of personalized treatment and targeting policies. In particular, it features theories and implementations of Empirical Welfare Maximization (EWM) approach in static and dynamic settings. Analogous to the empirical risk minimization approach in machine learning, the EWM approach constrains the class of decision rules (targeting policies), while imposing minimal assumptions on the distribution of counterfactual outcomes and covariates. The EWM approach is therefore robust to misspecification of the data generating processes, and attractive in realistic settings of policy design, as the policy maker in practice wants the targeting policy to satisfy capacity and budget constraints as well as interpretability and fairness criteria. The lecture also covers applicability and non-applicability of machine learning classification algorithms to the context of learning optimal targeting policies.

Abstract:

Empirical evidence in social and biomedical sciences commonly suggests individual's response to public policy or medical treatment is heterogeneous. How to efficiently learn and exploit such heterogeneity for the purpose of designing personalized policy/treatment are important topics of interdisciplinary interests.



Toru Kitagawa is Lecturer in the Department of Economics and University College London. His research expertise cover both microeconometrics and macroeconometrics, with particular interests in program evaluation, treatment choice, statistical decision theory, and (robust) Bayesian analysis. Toru also affiliates with Cemmap and Institute for Fiscal Studies as research fellow, and is an Editorial Board Member of Review of Economic Studies and an Associate Editor of Journal of Econometrics. His publications have appeared in leading journals including Econometrica, Journal of Econometrics, American Economic Journal: Microeconomics, Journal of Business Economics and Statistics.



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