

- 主 講 人:黄名鉞 助研究員(中央研究院統計科學研究所)
- 講題: Robust inference of conditional average treatment effects using dimension reduction
- 時 間:111年03月29日(星期二)<u>上午11:00~12:00</u>
- 地 點:中央大學鴻經館M429室
- 茶 會:<u>上午 10:30 ~ 11:00</u> 地 點:鴻經館 510 室

## ABSTRACT

Personalized treatment aims at tailoring treatments to individual characteristics. An important step is to understand how a treatment effect varies across individual characteristics, known as the conditional average treatment effect (CATE). In this study, we make robust inferences of the CATE from observational data, which becomes challenging with a multivariate confounder. To reduce the curse of dimensionality, while keeping the nonparametric advantages, we propose double dimension reductions that achieve different goal. First, we identify the central mean subspace of the CATE directly using dimension reduction in order to detect the most accurate and parsimonious structure of the CATE. Second, we use a nonparametric regression with a prior dimension reduction. We establish the asymptotic properties of the proposed estimator, taking into account the two-step double dimension reduction, and propose an effective bootstrapping procedure without bootstrapping the estimated central mean subspace to make valid inferences. A simulation and applications show that the proposed estimator outperforms existing competitors.



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