

Indian Statistical Institute

Applied Statistics Unit

SEMINAR NOTICE

Speaker: Abhishek Chakraborty, Texas A&M University

Title: A General Framework for Treatment Effect Estimation in Semi-supervised and High Dimensional Settings

Date: 13 June, 2023

Time: 16:15 PM

Venue: ASU Seminar Room

Online Platform: Google Meet (meet.google.com/trc-fgrb-vfn)

Abstract: Semi-supervised (SS) settings are of growing relevance in modern studies. But their full scope and benefits for causal inference problems are not yet well explored. Using the average treatment effect (ATE) as a prototype case, we provide a general understanding of causal inference in SS settings, where one has a labeled (or supervised) data on a treatment, a response, and a set of (possibly high dimensional) covariates, and a much larger unlabeled (or unsupervised) data without the response. It is generally of interest to investigate how the additional unlabeled data available in the SS setting can be exploited to improve (in efficiency and/or robustness) upon a fully supervised approach. In this work, we develop a family of SS ATE estimators with a flexible construction, and give a full characterization of their properties, revealing several key benefits of SS settings. In particular, they are ensured to be: (1) more robust and (2) more efficient (and optimal too in some cases) than their supervised counterparts. Moreover, beyond the “standard” double robustness that can be achieved by supervised methods too, we also establish root-n consistency and asymptotic normality of our SS estimators whenever the propensity score model is correctly specified, without requiring any specific forms for both the nuisance models. Such an improvement in robustness arises from the use of the massive unlabeled data and thus is generally unachievable in a purely supervised setting.

All are invited to attend.

Please write to SOMENATH DAS somenath1011@isical.ac.in in case you do not receive the invitation link 48 hours before the seminar time.