University of California, Irvine
Statistics Seminar

Doubly Robust Estimation for Time-to-event Outcomes

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In this talk we review our works on doubly robust estimation for time-to-event outcomes ranging from the popular marginal structural Cox model to additive hazards regression, and from dependently left truncated data to complex outcomes such as competing and semi-competing risks (also referred to as multi-state illness-death model). A common theme to these works is the well-known semiparametric theory, albeit the specific techniques and considerations vary. A notable feature is the rate double robustness which allows machine learning or nonparametric approaches to be applied in order to estimate the nuisance parameters or functions, and this circumvents the compatibility issue surrounding nonlinear models like the proportional hazards one. Our main estimand of interest is a treatment effect, with or without randomization. Much of the work has not appeared in the peer-reviewed literature (though several are on Arxiv), and discussion and inputs are very welcome.