Yale SCHOOL OF PUBLIC HEALTH
Biostatistics

Fairness-oriented Learning for Optimal Individualized Treatment Rules

Lan Wang, PhD
Professor and Department Chair
Department of Management Science
University of Miami

12:00 Noon Eastern time, Tuesday, November 1, 2022
47 College Street, Room 106 A&B

ABSTRACT
A notable drawback of the standard approach to optimal individualized treatment rule (ITR) estimation is that the estimated optimal ITR may be suboptimal or even detrimental to certain disadvantaged subpopulations. Motivated by the importance of incorporating an appropriate fairness constraint in optimal decision-making (e.g., assign treatment with protection to those with shorter survival time), we propose a new framework that aims to estimate an optimal ITR to maximize the average value with the guarantee that its tail performance exceeds a prespecified threshold. The optimal fairness-oriented ITR corresponds to a solution to a nonconvex optimization problem. Furthermore, we extend the proposed method to dynamic optimal ITRs. (Joint work by Ethan Fang and Zhaoran Wang)