

Counterfactual Optimal Treatment Assignment Policies

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Abstract

We study optimal treatment assignment under counterfactual environments. While the literature on treatment effects focuses on average, distributional, and inequality effects, recent work has shifted toward learning optimal policies that map individual covariates to treatment decisions. We incorporate counterfactual shifts in covariate distributions and study their implications for policy evaluation and selection. Under an invariance of conditional distributions assumption, we identify counterfactual outcome distributions and characterize optimal policy choice. We develop inference procedures for counterfactual optimal social welfare and provide tools for ex-ante policy evaluation. (joint with Shaomin Li, Jen-Che Liao and Robert P. Lieli)