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Targeted Minimum Loss-Based Estimation

I will review Targeted Minimum Loss-Based Estimation (TMLE) that provides a template for the construction of semiparametric efficient substitution estimators of low dimensional estimands in large semiparametric models for which maximum likelihood estimation breaks down due to the curse of dimensionality. We will review various examples, including estimation problems in causal inference. We also review a formal theorem that establish asymptotic normality and efficiency of TMLE, whose condition on the remainder demonstrate that the incorporation of super learning (an ensemble algorithm using cross-validation) is fundamentally important.