Specification tests for generalized propensity scores using double projections

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Abstract: In this article we propose a new class of nonparametric tests for testing the correction specification of generalized propensity score models based on double projections that is suitable particularly with high-dimensional covariates. The first projection has been introduced in the literature to address the high dimensionality of available covariates and to apply a specification test to one-dimensional projections of the covariates, while the second projection is particularly useful for eliminating the parameter estimation effect and also facilitates a convenient multiplier bootstrap procedure to implement the proposed tests. The combination of two projections, termed as double projections, delivers a nice diagnostics tool that is easy to use in practice and powerful against a broad class of alternatives even in the presence of high-dimensional covariates.