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Consistent model specification tests based on k -nearest-neighbor estimation method. (English) Zbl 1431.62189

J. Econom. 194, No. 1, 187-202 (2016).

Summary: We propose a simple consistent test for a parametric regression functional form based on k -nearest-neighbor (k -nn) method. We derive the null distribution of the test statistic and show that the test achieves the minimax rate optimality against smooth alternatives. A wild bootstrap method is used to better approximate the null distribution of the test statistic. We also propose a k -nn statistic which tests for omitted variables nonparametrically. Simulations and an empirical application using US economics new Ph.D. job market matching data show that the k -nn method is more appropriate than the kernel method to analyze unevenly distributed data.

Reviewer: [Reviewer \(Berlin\)](#)

MSC:

[62G10](#) Nonparametric hypothesis testing
[62G20](#) Asymptotic properties of nonparametric inference
[62G09](#) Nonparametric statistical resampling methods
[62P20](#) Applications of statistics to economics

Cited in **3** Documents

Keywords:

[k-nearest-neighbor method](#); [consistent test](#); [bootstrap](#); [empirical application](#)

Full Text: [DOI](#)

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